COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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DP Catches Carter Contradictions

By Ann Dooley

Of the CW Staff

GASTONIA, N.C. – Democratic Presidential candidate Jimmy Carter's campaign slogan appears to be "Trust Me," but an Associated Press (AP) computer not programmed on faith alone has detected discrepancies in several of Carter's statements on the right to work.

The *Gastonia Gazette* here recently used the AP data bank on Presidential candidates in uncovering the discrepancies.

The AP computer in Atlanta relayed the information that "Carter has been quoted as saying he had not advocated repeal of Section 14B of the Taft-Hartley Act which allows states to enact right-to-work laws banning shops where all employees must belong to a union.

"When he was governor of Georgia, however, Carter had said if legislators were to repeal the state right-to-work law he would sign the repeal," AP said.

"Last spring, after meeting with AFL-CIO President George Meany, Carter was quoted as saying: 'I think 14B should be repealed.'

"Before meeting with Meany, Carter had said he would not campaign for repeal of 14B, but would sign a repeal if it passed Congress," AP added.

The data bank, which is updated weekly, is implemented on a Hendrix Electronics, Inc. 3400 system based on a Digital Equipment Corp. PDP-8E processor.

Itel Brings Out Two CPUs With IBM Compatibility

By Esther Surden

Of the CW Staff

NEW YORK – As expected, Itel Corp. last week unveiled two CPU members of an IBM-compatible mainframe family, the AS/4 and AS/5 Advanced Systems (AS).

Six models of the mainframes, which are manufactured by National Semiconductor Corp., were introduced and are said to span a range from 1.4 times the power of a system 370/148 to the equivalent of a 370/158-3MP. They are scheduled for delivery in the second quarter of 1977 [CW, Oct. 11].

All models of the AS are field-expandable to larger models without changing the CPU, Itel stated, adding the systems are fully operationally compatible with the 370/158.

Operating systems, program products and user programs which run on a 158 will run on a similarly configured AS model without modification, the firm claimed.

The AS systems were designed to run IBM operating systems in the Native Mode of operation. Model 158 peripherals will also run on the AS systems, Itel said.

Itel intends to provide both hardware and software support for the systems through Itel field engineers, customer service engineers and program service engineers who reportedly will be able to patch or modify the operating systems if necessary.

Permanent operating system changes will be handled by IBM, Itel said, and new IBM operating system releases will be provided to all users of the Itel CPUs.

All models feature virtual storage capability, the company added, and have a CRT, light pen and 180 char./sec printer console.

The AS models have a slower storage read/write cycle time than the comparable IBM systems, but this is offset by the fact they fetch 16 bytes compared to four or eight on the IBM models, Itel said.

The AS/4 configuration runs under DOS/VS, OS/VS1, OS/VS2 and the MVS operating systems; processor cycle time is 115 nsec. The AS/4 features seven internal channels and a memory that ranges in size from 1M byte to 4M bytes.

The AS/4-MP runs under the MVS op-

(Continued on Page 7)

EFT Technologies Don't Mesh

Banks Hit for Ignoring Retailers' Needs

By Toni Wiseman

Of the CW Staff

PHOENIX – Banks and other financial institutions are planning electronic funds transfer (EFT) systems without any thought to the needs of the retailer, Del Olson, assistant corporate comptroller of the Dayton Hudson Co., charged here last week.

Retailers "have no intention of relinquishing their control over 'sacrosanct' point-of-sale procedures or devices to a third party," he said at the National Retail Merchants Association's (NRMA) annual DP and Data Communications Conference here last week.

Coverage of the NRMA's annual DP and Data Communications Conference continues on Page 8.

Bankers are developing electronic devices designed to operate at retailers' point of sale based on magnetic card technology which is incompatible with the optical scanning technology embraced by major retailers, he noted.

This means a bank card will not work in the retailers' OCR-A terminals and vice versa unless additional interfaces are added, he said.

This situation reflects the retailer's fundamental concerns: "We do not want to impair our point-of-sale efficiency by introducing foreign devices or procedures . . . nor are we interested in making costly modifications to our point-of-sale systems which [already] cost millions of dollars to implement," Olson said.

"This is a basic concern which we feel bankers must understand as they proceed in the development of funds transfer systems," he added.

The President's National Commission on Consumer Finance warned in its 1972 year-end report that the commercial banks' expanded and dominant role in credit cards together with their potential control of EFT and, by implication, ownership of the credit information system could lead to an oligopoly, restraining competition unfairly in the consumer credit market, Olson pointed out.

(Continued on Page 2)

House Group Wants Communications Act Completely Revised

By Ronald A. Frank

Of the CW Staff

WASHINGTON, D.C. – The House Subcommittee on Communications has determined a "basement-to-attic rewrite" of the Communications Act of 1934 is needed, according to Andrew Margeson, subcommittee staff economist.

Speaking at a meeting of the Computer Law Association (CLA) here last week, Margeson said subcommittee chairman Lionel Van Deerlin (D-Calif.) has decided to seek suggestions from the public to implement the goal of writing new communications legislation.

The Communications Act established the regulatory framework for the operation of the Federal Communications Commission (FCC). The proposed Consumer Communications Reform Act of 1976 seeks to redirect FCC policies only along specific lines regarding interconnection and competition.

After three days of recent hearings on the Reform Act, however, the subcommittee apparently has decided a general review of the entire 1934 act will be undertaken.

The subcommittee is aware of what is at stake and the outcome will have a definite effect on the computer industry, Margeson said.

(Continued on Page 6)

Kolence: True or False?

By Michael F. Morris

Special to Computerworld

Reacting to " 'Software Physics' Standardizes DP Operations" [CW, Sept. 20] in which author Barry Stevens outlined some of the concepts of Ken Kolence's theory of software physics, this commentary adds a new perspective and challenges the DP community: Prove the theory true or false.

Men and women of science, arise! We have been offered a theory to dismantle.

Full-fledged theories don't happen very often. When they do, they cause disagreement, argument and – sometimes – progress.

Kenneth Kolence – a pioneer in the field of computer performance evaluation – has proposed a theory of "software physics," probably the first to deal exclusively with computers and computer workloads. Is it possible this small bit for man may really be a giant byte for mankind?

We'll have to test it to find out.

Kolence's theory says, basically, that any computer configuration's capacity to do work overtime ("software power," in Kolence's parlance) can be calculated as a vector quantity essentially independent of the demands placed on the equipment by a workload.

Further, the capacity demand by a workload ("software work") can be calculated as a vector quantity independent of the available equipment.

Therefore, a basic and operationally important part of Kolence's theory may be demonstrated to be incorrect if it can be shown the calculated "software work" vector is completed in a time period such that it exceeds the

(Continued on Page 4)

Report Raps Agencies For Wasting Millions With Poor DP Policy

By Nancy French

Of the CW Staff

WASHINGTON, D.C. – Mismanagement in the purchase and use of computers by government agencies is costing U.S. taxpayers millions of dollars, according to a report issued here this month by the House Government Operations Committee.

The product of several months of staff work and three days of hearings this summer, the report criticized six money-wasting practices: bidding on systems by make and model rather than functional specifications; lack of long-range planning; lack of DP standards; failure to review computer utilization; insufficient use of high-level languages; and acquisition of DP equipment without exploring alternative approaches such as services or minicomputers.

The House Government Operations Committee is chaired by Rep. Jack Brooks (D-Texas), author of the Brooks Act, which was aimed at increasing the efficiency and cost effectiveness of federal DP activity.

The hearings and resulting report evolved from the discovery that the percentage of federal DP procurements made by competitive bidding had dropped from 60% in the eight-year period from 1967

(Continued on Page 4)

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High Court Ruling Stymies EFT Operations of Banks

By Toni Wiseman
Of the CW Staff

Developments in the area of electronic fund transfers (EFT) seem to be occurring mainly on court dockets these days, with laws being ruled unconstitutional, orders rescinded and hearings denied.

Faced with three similar petitions on branching issues – the first from two Illinois banks, the second from a bank in Missouri and the third from the Comptroller of the Currency – the Supreme Court recently denied the Illinois banks a hearing, but has not yet decided whether to hear the other two cases.

The court, in a move destined to impede the growth of electronic banking, refused to review a lower court ruling that off-premise customer bank communications terminals (CBCTs) are branch banks and therefore illegal where branching is prohibited by law.

The appeal was filed by the First National Bank of Chicago and Continental Illinois Bank & Trust Co. [CW, Aug. 2].

The High Court's ruling will deal the hardest blow to banks operating in states such as Illinois and Texas where branching is illegal.

It will also, however, impact banks in states such as New York, New Jersey and Connecticut, where branch banking is permitted on an intrastate basis, by preventing them from using the devices across state lines.

A spokeswoman at Continental said that under current law, this is the end of the trail, the last effort at a reinterpretation of the law.

The only avenue left open to the banks is to go to the Illinois Legislature and the U.S. Congress and try to get the law changed, she said. She would not, however, speculate on whether the banks would consider this possibility.

Continental expects a "cease and desist" order from Judge Wills of the U.S. Court of Appeals in Chicago, putting his earlier decision into effect, but the bank will continue to operate its CBCTs until the order is sent out, she noted.

The First National Bank in St. Louis petitioned the Supreme Court several weeks after the Illinois banks and it is too early to expect notification of whether the court will hear its case.

"Optimistically we'd like to think they will, but realistically we have to figure the chances aren't good after Continental and First National were turned down," a bank spokesman said.

Even if the Missouri bank is turned down, the Supreme Court could decide to hear the Comptroller's case.

U.S. District Court Judge Aubrey Robinson has ordered the Comptroller of the Currency to officially rescind his CBCT ruling, notifying all national banks that operation of CBCTs, unless they have been approved specifically as branches, is illegal.

The Comptroller complied with Robinson's order, but now is asking the Supreme Court to review lower court CBCT rulings that maintain CBCTs are branches.

On a less definitive level, Sen. Thomas J. McIntyre (D-N.H.) is planning a comprehensive study of the entire McFadden Act and its application to the branching issue.

"The study's aim is to examine the legislation in light of current technology and the current marketplace, 40 years after the law was enacted," according to a Senate Banking Committee spokesman. Hearings are tentatively scheduled for December, he added.

This development will no doubt supercede a rough-draft bill which had been circulating in Washington. Tentatively entitled the "Remote Electronic Facilities Act of 1976," it is aimed at amending the McFadden Act to state that remote facilities such as automated teller machines (ATMs) and point-of-sale terminals are not branches.

The draft was never introduced and, in light of the current scenario of McIntyre's study, there is some doubt it will ever appear, the spokesman indicated.

Meanwhile, on the state level, Judge Raymond Berg of Illinois' Cook County Court ruled Chicago's recently passed financial services ordinance, which would have permitted city banks to operate six community offices and an unlimited number of ATMs, exceeded the city's home rule powers under which it was enacted [CW, Aug. 2].

The City of Chicago has filed an appeal of Berg's ruling.

EFT Hearings Set

WASHINGTON, D.C. – The National Commission on Electronic Fund Transfers (EFT) has scheduled a series of hearings here later this month.

Hearings on consumer issues are planned for Oct. 26-27; Oct. 28-29 will be devoted to branching issues.

While the witness list is not yet available, the commission has outlined five areas which will be covered in the consumer hearings. These include privacy (unauthorized access and dissemination of information), consumer convenience, consumer legal rights, security from error and fraudulent use and choice in use of financial services and financial service institutions.

Banks Hit for Ignoring Retailers

(Continued from Page 1)

"In the final analysis, EFT will ultimately be successful only with the cooperation of retailers who allow access to their premises and point-of-sale terminals," he said.

To obtain that cooperation, Olson proposed a half-dozen principles on which general merchandise retailers should insist with respect to the future development of EFT systems:

"Retailing should oppose any encroachment upon its proprietary interest and control of its cash management and credit operations, including our customer relations. We should oppose any system which would turn over the control of those functions to some third party.

"We should insist upon the continuation of competition as a basic principle in the development of [EFT] systems so as to be available to all interested parties.

"Retailing should oppose any legislation or regulation that would mandate the pairing of, or use of, a retailer's point-of-sale equipment with any third party.

"Retailing should support only those EFT systems which are privately owned and privately funded rather than any system which is proposed for government ownership or funding.

"We should oppose the enactment of any state legislation which would restrict the ability of any segment of industry to participate in the development and expansion of EFT.

"We should support those proposals which will ensure the open access of all credit grantors to information on creditworthiness which is held by a consumer reporting agency."

On the Inside This Week

NEWS

Ex-Chief of OTP Disappointed by Houser's Stand 6
Questionable Payments Really $4.6 Million: CDC 7
People Stressed as Vital Element of Retail Systems 8
IBM Wooed Two Large Users With Nonexistent System ..12
FAPRS Provides One Source of Data on Federal Funds ...14
Modeling System Helps New England Cut Energy Use 15

EDITORIAL

Editorial: Keep the Questions Coming 16
DPMA Continues Its Ostrich Stance on Certification 17
Taylor Report: Overbooking Justified on Brittle Data 17
Software Ruling Gives Cue on Protection From Taxes 18

SOFTWARE & SERVICES

Logic of Software Physics Gives Guides to Change 19
DBMS for Univac 1100 Updated 22
N.J. Firm Links Remote Service for Order Entry 23

THE HUMAN CONNECTION

Emphasis on Youth Wastes Experience of Older DPer 24

COMMUNICATIONS

Reform Act Hurts Consumers: FCC Chief 25
Planners of Overseas Nets Urged Not to Work Alone 29
Reform Act Could Affect DP Industry, Users Warned 30
Users Urged to Plan for Potential Problems 31

TERMINAL TRANSACTIONS

Qualterm Orients Word Processor to Communications 27
Source Data Recorder Transmits From Memory 27

SYSTEMS & PERIPHERALS

Tape Handler Saves SSA $1 Million 33
Beermaker Picks DP Site With Priority Checklist 36
Dairy Using System to Assure Fresh Milk Delivery 38

MINIWORLD

Hospital Finds Mini/FM Mix Economical 40
System's Jobs Range From Accounting to Biorhythms ...41

COMPUTER INDUSTRY

OMB Wants Federal Agencies to Give Up DP Centers 43
IBM Planners Foresaw Plug-Compatible CPUs 43
UCC Looks to Bright Future After Demise of Datran 45
Total In-House Manufacturing No Longer Makes Sense ...46
CA Flexing Market Muscles After Record Sales Year 47
ICCL to Supply Singer Users in Canada 48
Tran Basing Business Philosophy on 'Actionary' User 49
Services Firm Battling Keypunching Tax 50
Single-Board 80/20 Has Multiprocessor Capability 51

FINANCIAL

Lear Siegler Posts Net With 32% Rise for Year 64
DDI Half-Year Net Dips 64

CORRECTION

"Is it true that almost half the 50 largest firms sort with SyncSort?"

"No. More than half."

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2	General Motors
3	Texaco
4	Ford Motor
5	Mobil Oil
6	Standard Oil of California
7	International Business Machines
8	Gulf Oil
9	General Electric
10	Chrysler
11	International Tel. & Tel.
12	Standard Oil (Ind.)
13	U.S. Steel
14	Shell Oil
15	Atlantic Richfield
16	Continental Oil
17	E. I. du Pont de Nemours
18	Western Electric
19	Procter & Gamble
20	Westinghouse Electric
21	Union Carbide
22	Tenneco
23	Goodyear Tire & Rubber
24	International Harvester
25	Occidental Petroleum
26	Phillips Petroleum
27	Union Oil of California
28	Bethlehem Steel
29	Caterpillar Tractor
30	Eastman Kodak
31	Rockwell International
32	Dow Chemical
33	Kraftco
34	RCA
35	Esmark
36	Sun Oil
37	LTV
38	Beatrice Foods
39	Xerox
40	United Technologies
41	Greyhound
42	Firestone Tire & Rubber
43	Boeing
44	General Foods
45	Ashland Oil
46	Monsanto
47	W. R. Grace
48	R. J. Reynolds Industries
49	Litton Industries
50	Lockheed Aircraft

Toss a dart at the list today, and you've got a better than 50-50 chance of finding a SyncSort user. Wait a few days or weeks—and who knows? Maybe 80-20?

It will never be 100-0, of course. Because no matter how good we make the sort—and improving it is a fetish with us—we're never going to be able to sell it to our Large Competitor, Old No. 7, above.

However, our disappointment is somewhat lessened by the knowledge that we've got a similarly high number of satisfied users among the other 450 companies on Fortune's list.

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2. Sort Support—Ours is better than our large competitor's. Proximity is one reason. Our sort support people sit right next to the people who develop the sort—not in another town, state or country.

If you'd like to confirm the last point, try this test. Make an intentional "zap" in any IBM sort and then call them for help. Then make a similar "zap" on SyncSort and give us a ring. Compare the answers you receive—and the time it took you to get them.

If we don't beat No. 7, we'll eat the whole town of Armonk.

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Report Raps Federal Agencies for DP Mismanagement

(Continued from Page 1)

to 1974 to only 36% in 1975 (see related story on Page 43).

The General Services Administration (GSA), the Office of Management and Budget (OMB), the National Bureau of Standards (NBS) and the user agencies share responsibility for failing to live up to the nearly 10-year-old Brooks Act, the committee said.

The report was especially critical of the government's practice of seeking new equipment by make and model rather than by functional specifications – a practice that costs more and favors certain vendors.

Make and model procurement should be approved only when the national interest requires such action, the report recommended. Otherwise, requests for procurement should describe needs in terms of functions required.

Interim upgrades, add-ons and replacement systems should be avoided except where a user agency is assigned new responsibilities, the committee added.

Federal agencies are not developing long-range DP plans based on projected missions and programs, the report said, suggesting "each agency should have a five-year plan. Once plans are made, the DP requirements should be stated in terms of functional specifications, the committee stated.

To make planning and procurement more effective, Congress should have line-item appropriation authority for DP, the committee said.

"DP expenditures represent such a significant percentage of the overall budget" that effective management requires DP expenditures be "considered separately," the report said.

As for standards, the report criticized the NBS for its failure to adopt a money-saving I/O interface standard that would give users a greater choice in selecting peripherals.

NBS, which seems to prefer to adopt the voluntary standards developed by the American National Standards Institute rather than set its own, according to the report, has an obligation to develop federal standards when conflicting interests impede the voluntary standards process.

But even if NBS develops standards in the future, they will be of little value unless OMB develops an effective means of enforcing them, the committee said.

Agencies were also hit for their use of machine-dependent programs. Because more and more equipment decisions are being dictated by the wish to avoid costly software conversion, federal agencies should be required to write programs in high-level languages, the committee said.

Further, software conversion costs should not be considered in evaluating bids for procuring DP systems except to the extent that those costs involve direct out-of-pocket expenses for program conversion, the report said.

Another source of waste, the committee said, lies in the agencies' failure to effectively use the DP resources they have.

The Social Security Administration was cited as "the most flagrant" in this regard for "operating equipment at 50% capacity and running second-generation programs on third-generation equipment."

Under existing regulations, an agency that wants to handle its own procurement and sidestep the formality of bidding – especially when only one make and model will do for reasons of compatibility – merely requests a "delegation of procurement authority" from GSA. If the request seems justified, the GSA responds routinely.

The report, however, found GSA lacks the manpower and resources needed to examine in any depth a user agency's request for a noncompetitive procurement.

Because of its relatively low position on the federal totem pole, the GSA also tends to buckle under when agencies with greater "prestige" or "dominance" apply pressure in a procurement situation, the report said.

As a result, it grants agencies permission to obtain DP equipment by make and model rather than competitive bidding when it is not necessarily justified, according to the report.

While the Brooks Act permits agencies to specify their DP requirements, it does not allow them to specify brand names of equipment, the report said.

Kolence Software Physics Theory: True or False?

(Continued from Page 1)

calculated "software power" vector. In other words, the real workload is finished by the real equipment faster than the theory predicts.

Sound easy? Try it.

Surely someone can find a counterexample. Fortunately, searching will be productive and practical even if a real counterexample can't be found. The amount by which the corresponding vector elements of "software power" exceed "software work" in the appropriate period is a precise statement of a real configuration's efficiency relative to real workload.

For another view on software physics, see story on Page 19.

Most managers should be willing to support a thorough search for a counterexample to Kolence's theory if they understand the byproduct of this quest will be a set of consistent descriptions of how well-matched the equipment is to the various changes of workload overtime in their own environments.

Isn't this exactly the set of performance indicators every installation says it wants?

Kolence's theory does not deal with every computer-related problem. It only addresses those directly concerned with capacity management. But, in my opinion, it addresses these thoroughly and consistently.

It is hoped the arguments which must rage on the merits of his theory will aim at what Kolence has proposed rather than at what his work doesn't address. Those who are in the computer performance evaluation field must accept the burden of disproving (and maybe even proving) Kolence's theory.

It is fortunate that most in this field are open to new, perhaps heretical, ideas. The danger now – as is historically the case whenever a theory is proposed – is that the few with closed minds and open mouths may cause delay in the testing of the theory by those who prefer listening to thinking for themselves.

There are significant roadblocks to the widespread testing of the theory of software physics. Principal among these is the need to read and reread Kolence's very expensive book, *An Introduction to Software Physics*, and then attend a formal course taught by Kolence or one of his disciples to learn what the book tried to say.

Each who will test the theory must know the rather cumbersome notation and be willing to recall (or learn) the use of vector algebra to understand and describe the actions and reactions of this new physics. Then each must practice applying these notations and mathematics in formal exercises just like in elementary calculus or sophomore physics (of the conventional kind).

Clearly, this would be an ideal exercise for a campus, but Kolence chooses to risk using the theory in real applications first – to see whether the theory is right – before encouraging academics to use his ideas.

On the more positive side, software physics parallels Newtonian physics, not quantum theory or any of the modern physics. The terms are like "force" and "mass" without the perturbations of things like atmospheres or third bodies.

In this same vein, and at the risk of sounding too much like a dewy-eyed historian, I would point out the very young Isaac Newton proposed a theory for his peers to critique and was so badly maligned he never proposed another theory (some say he even refused to use the word) for the rest of his long life.

It is presumptuous to class Kolence's theory with Newton's. But who can say this is improper until the proofs have been made?

It is fitting a theory should be proposed so very early in the existence of our nebulous science of computers. Less than 30 years and already a theory?

It would be equally fitting if the theory turned out to be wrong, but wouldn't it be pleasant to be involved when the cornerstone of a real science was laid?

I'm sure I reveal too much when I admit I know Kolence very well and count him as a good friend. He is clearly the underdog in the coming contest and I don't really think he'll prevail.

But I hope that, if he loses, it's because some careful individual has demonstrated conclusively the theory is wrong, not because of some thoughtless individual who talks loudly.

Currently a consultant with the U.S. General Accounting Office, Morris emphasized he "has no past or present business connection with Kolence or the Institute for Software Engineering" although he has attended a week-long "Introduction to Software Physics" seminar.

That seminar is given by the institute, which can be reached at P.O. Box 637, Palo Alto, Calif. 94392.

Western Union Joins SP As Bidder for Datran Assets

ALEXANDRIA, Va. – Southern Pacific Communications Co. (SP), previous sole bidder for the assets of defunct Data Transmission Co. (Datran) [CW, Oct. 4], found some competition in the form of Western Union Telegraph Co. at the U.S. Bankruptcy Court hearing here last week.

As a result, the hearing will reconvene Tuesday to continue the bidding process, according to receiver Stanley J. Samorajczyk.

'VSERV' Cuts Disk Space Waste

A tool for identifying wasted disk space and allowing more efficient space allocation in IBM DOS or DOS/VS environments, Vserv is a "volume table of contents (Vtoc) service utility" available from Occidental Computer Systems, Inc. (OCS).

Vserv solves the disk management problems encountered in most DOS and DOS/VS installations by providing management with a comprehensive device mapping facility and Vtoc access capabilities.

Vtoc manipulation commands supported by Vserv allow the user to graphically display a pack map and create, delete, update or rename a Format-1 label for a file.

THe ability to truncate one or more files to the last used track is also part of the package. These Vserv options allow management to take direct action to solve underutilized space and overallocated file problems.

Vserv is provided with a Genserv macro that allows the user to tailor his Vserv operation to defaults and security checking. Security checking is through the UPSI or SYSPARM fields of the supervisor and provides safety against unauthorized use of the commands.

Vserv consists of a 18K program and a B transient. Vserv reads the Vtoc, sorts it in core and prints the pack map; this shows free spaces and provides a pack usage summary, displays end-of-file addresses, recognizes system files and libraries and flags data secured and expired files.

Vserv is available on a 30-day free trial. The user guide is self-generated by the Genserv macro and the system is provided on magnetic tape.

Vserv is available for a one-time purchase price of $400. Occidental Computer Systems, Inc., 10202 Riverside Drive, No. Hollywood, Calif. 91602.

VSERV
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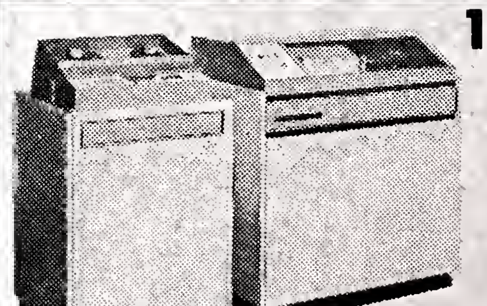

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Ex-Chief of OTP 'Disappointed'
Houser Not Taking Strong Stands

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – It is a "great disappointment" to John Eger that the White House Office of Telecommunications Policy (OTP) has not taken a more positive stand on pending issues.

Eger, who stepped down as OTP director in July, said Thomas Houser, present OTP chief, is taking a more conservative approach in dealing with the Consumer Communications Reform Act of 1976, the Justice Department antitrust suit against AT&T and other communications issues.

Contrasting recent statements by Houser with his own stronger positions, Eger said in an interview last week that some of his speeches made in support of competition were "partially subjective." While some of these statements were regarded by others "as a crusade," Eger feels the director of OTP has a responsibility to speak out on issues.

Since OTP is an executive office of the White House, statements from the director may imply Administration approval. In actual practice, such speeches are often not cleared with the White House, he noted, and it may have been incorrect to assume White House agreement with some of his speeches.

The introduction of the Reform Act is part of a multifaceted program launched by the telephone industry to get a bigger share of the emerging data communications/data processing market, Eger said. Even if the present bill is not successful, the telephone companies are geared for a legislative effort that could take three to 10 years, he predicted.

If Bell gets only one part of the Reform Act proposals passed, it will have won, so it is essentially a "no lose" situation for AT&T, according to Eger, who is now with a Washington law firm.

When the Federal Communications Commission (FCC) first introduced competition, it should have known AT&T could not compete fairly under the rules spelled out by the commission, Eger said. Based on this inequity, "my gut reaction is that it ought to have something," he added, "and we cannot fault AT&T for asking for a hearing before Congress."

The current telecommunications questions now being considered by Congress will go well beyond the scope of the Reform Act; it is possible Congress will examine telecommunications capability as a national economic resource, Eger believes.

The Reform Act should be regarded as a de facto nationalization bill and a reaction to 40 years of technological progress being applied to a 1934 act, he said.

The FCC has done a good job, but with limited tools, he added.

While the issues raised by the Reform Act are pending, AT&T will continue to introduce devices that perform more data communications, and each device will look a little more like a business machine; it is probable that AT&T will get permission to get into DP in some way, Eger said.

House Unit Wants Act Rewritten

(Continued from Page 1)

Among the issues to be considered by the subcommittee, Margeson said, are whether the FCC has established fair competitive ground rules; whether business telephone services really subsidize residential services; and what the implications of changing FCC policies toward competition are.

In the area of economics, Margeson said the uniform system of accounts used by the telephone companies to report their activities to the FCC "is a turn-of-the-century method that is now almost totally useless."

The debate raised by the Reform Act centers on two main areas, according to Sebastian Lasher, assistant to FCC Commissioner Abbott Washburn. First, it seeks to determine who decides the scope of consumer equipment choice and, second, what criteria will be used to decide common carrier choices, Lasher said.

In the interconnection area, the remaining problems are technical since it has already been determined there is no economic harm to users. In the specialized carrier area, an economic question remains since it has been determined no technical issues are involved, he told the CLA members.

'Cartelization' of Industry

Several speakers took issue with recent FCC competition policies and said they were leading to "cartelization" of the communications industry.

The FCC has failed to plan for the economics of competition, according to William Malone, vice-president of General Telephone & Electronics Corp. It is "introducing competitors, not competition" and, as a result, the user is foreclosed from using certain services, he charged.

John Bartlett, a Washington regulatory attorney, said substantial innovation has taken place since the Carterfone decision and this in turn has increased the utility of the telephone network. As a result, both the independent equipment suppliers and the telephone companies have benefited, he said.

Competition is inevitable, so the only question left is how to regulate it. The FCC is drifting toward cartelization, and the user will be the loser, Bartlett said.

Herbert Jasper, executive vice-president of the Ad Hoc Committee for Competitive Telecommunications, told CLA members the telephone companies lobbying for the Reform Act are claiming basic telephone service is being offered "as a loss leader."

Actually, residential subscribers are subsidizing business users, Jasper said.

The FCC has already studied the basic issues raised by the Reform Act and refuted many of the allegations now raised by the telephone industry, he added.

In an earlier session dealing with the reopening of the Computer Inquiry by the FCC, Prof. Anthony Oettinger of Harvard University said the science and technology of computers and communications "are now indistinguishable."

One can no longer tell computer functions from communications functions and, since the segments are arbitrary, it will require political solutions to determine the boundaries between fragments of the system, he said.

"We may pay an exceedingly high price to keep computers and communications separated" and there have been no studies on what this cost would be, Oettinger said. The FCC is operating under a very "shaky mandate" and is bumping up against jurisdictional boundaries with the new definitions in the Computer Inquiry, he said.

Edward Goldstein, director of product management for AT&T, said Bell intends to provide integrated communications services to users. Such services within the data communications area will include functions like transmission, media conversion and communications processing, Goldstein said.

Within the communications processing area, the telephone company would control such capabilities as code conversion, terminal polling, error control, format control, signaling and switching, he said.

Questionable Foreign Payments Really Total $4.6 Million: CDC

By Molly Upton
Of the CW Staff

MINNEAPOLIS – The computer operations sector of Control Data Corp. (CDC) made questionable foreign payments in 12 countries totaling $4.6 million over a 10-year period, according to a report issued by a special committee formed by CDC to study the problem.

Previous reports from CDC had indicated the firm made only $2.3 million in questionable foreign payments during 1973, 1974 and 1975 [CW, April 12].

The committee also found a CDC subsidiary made questionable domestic political contributions of $1,415 in 1972 and 1973 and its Commercial Credit subsidiary made questionable nongovernmental domestic payments of about $41,000 over an eight-year period.

CDC said there is no change in its earnings outlook for the third and fourth quarter because the questionable payments during 1976 were not material.

Limited Basis

Although no questionable payment arrangements were entered into after March 30 and no such arrangements now exist, CDC did continue making payments on a limited basis between the beginning of the special investigation in March and a board of directors meeting early this month.

In accordance with a management directive issued in March, all existing questionable payment arrangements were discontinued unless that "would jeopardize company assets or employee jobs or safety in a particular foreign country," the firm said.

Under this interim policy, in effect since March 30, payments totaled about $689,000, CDC said.

Substantially all of the $4.6 million in questionable foreign payments seem to have been made to foreign government employees to obtain favorable treatment in securing or retaining business, according to the firm.

The value of orders thought to be associated with these payments approximated $75 million. CDC's computer business had 1975 revenues of $1.2 billion, about one-third from foreign business.

From July 1, 1966 through June 30, 1976, the computer business had revenues of approximately $7.3 billion. About 31% of this amount was from foreign business, CDC said.

FAA Foul-Up Affects First Lady

PALMDALE, Calif. – The Federal Aviation Administration's (FAA) computer-based air traffic control system, which has been plagued by outages [CW, Sept. 20], failed again last week while monitoring a DC-9 aircraft carrying First Lady Betty Ford.

Although the outage occurred when the aircraft was less than the prescribed safety distance from a single-engine Cessna, there was no hazard to either plane, according to an FAA spokesman.

The plane carrying the First Lady was 45 miles northwest of Los Angeles when it came within "three and three-quarter miles horizontal separation and 700 feet vertical separation" from the Cessna, he explained.

No evasive action was necessary, a second FAA spokesman noted.

An air traffic controller at the Los Angeles Air Route Traffic Control Center here was aware of the close proximity of the two planes and was carefully monitoring them when the system went down, the spokesman noted.

He declined to state how many other aircraft were on the controller's scanner at the time the controller was forced to switch from the computerized system to the manual backup.

However, the outage occurred during a normally "busy period" of air traffic activity, he said.

A congressional hearing will be held tomorrow on the outages which have occurred nationwide since the radar DP (RDP) system was first implemented by the FAA three years ago.

The inquiry is in response to work done by Rep. David Evans (D-Ind.) who began an investigation after a 45-minute power failure in the Indianapolis control center.

Two CPUs From Itel Compatible With IBM

(Continued from Page 1)

erating system. It is a multiprocessing configuration with two CPUs, 14 internal channels and a memory range from 2M bytes to 8M bytes.

The AS/5-1 runs under DOS/VS, OS/VS1, OS/VS2 and MVS. Processor cycle time is 115 nsec. It features seven internal channels and an 8K buffer. Minimum memory size is 1M byte; the maximum is 8M bytes.

The AS/5-3 runs under DOS/VS, OS/VS1, OS/VS2 and MVS. It has a 115 nsec cycle time and seven internal channels and features a 16K buffer. Main storage capacity ranges from 1M byte to 8M bytes.

The AS/5-1MP, which runs under MVS, is a multiprocessor configuration with two CPUs. It has fourteen channels, a 16K buffer storage capacity and 2M bytes to 16M bytes of main storage.

The AS/5-3MP, also running under MVS, is a multiprocessing configuration with 14 internal channels. The buffer store is 32K, and memory size ranges from 2M bytes to 16M bytes.

The systems cost "approximately 65%" of equivalently configured IBM systems, according to an Itel spokesman. For example, the AS/5-3 with 3M bytes of memory costs $1.6 million. The AS/4 costs about $800,000 with 1M byte of memory.

The systems are 25% smaller than the 370/158 and weigh 37% less than the 158. This is a result of high density emitter-coupled logic used throughout the CPU, Itel said.

The systems are also said to be 10% cooler than comparable IBM units.

The CPU logic consists of pluggable chips on removable boards that swing out on a gate. Air-cooling units are located at the bottom of each gate to cool the system.

The systems are also said to use less power than the IBM CPUs.

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Keynoter Also Cites Risk of DP

People Stressed as Vital Element of Retail Systems

By Toni Wiseman
Of the CW Staff

PHOENIX – People – be they management, systems personnel, users or customers – are the most critical element in a system, Donald V. Seibert told attendees of the National Retail Merchants Association's (NRMA) annual DP and Data Communications Conference here last week.

Seibert, chairman and chief executive officer of J.C. Penney Co., focused his keynote address on the concept of putting people before technology, something he said is not new to retail management.

The ability to serve customers efficiently and effectively in the future will depend to a large degree on the retailer's expertise in the areas of data base management, management information systems and optical character recognition, he said.

But from a wider view, "the most critical element in any successful system is people – from the console operator to your chief executive officer. I also mean the people our systems help us serve – our customers," he said.

While the chief executive officer can't be involved in all projects, he must provide leadership in planning and overall objectives, Seibert said.

Above all, the chief executive officer must understand what systems can do for him and his company, he said. He must know the information systems provide the means he needs "to develop competitive advantages over other companies," he stated.

Systems, used intelligently, can increase efficiency and reduce costs of distribution, making it possible for a retail establishment to offer its customers better value than its competition, he said.

CW
At NRMA

"Whatever name you may give it, the subject of people comes down to management development, training and involvement in systems" he said.

Today's DP systems are more than ever at the heart of the retailing business, but "as our dependence upon systems grows and as they become increasingly complex, we must anticipate more risk," Seibert said.

When the computers in the catalog distribution centers go down, the centers go down right along with them; when the lines on the credit authorization systems go down, so does credit authorization, he emphasized.

The evaluation of such risk, the additional costs involved in minimizing such risks and the weighing of various alternatives require the highest level of management attention, he said.

"The executive who describes these decisions as 'systems decisions' either doesn't understand their importance or doesn't understand his or her management obligations. It is the obligation of systems people to be sure the issues are clearly defined, clearly understood and assigned a high enough priority," Seibert stated.

These decisions must be reached in a framework of partnership between the systems implementor and the systems user, Seibert said.

Both must have a sense of authorship, but the user requires something else which is extremely important – pride of ownership. The system must belong to the user, not to the systems department or to the supplier, he stressed.

"This pride of ownership will often make the difference between success and failure of the system. When you boil it all down, there is no system . . . that will be effective unless the user really wants that system to work," he stated.

Systems people, he noted, bring with them the systems approach to problem solving, not a computer approach but a productivity approach. Systems work is usually, if not always, related to the improvement of productivity, the most important issue currently facing retailers, he explained.

And while productivity of space, for instance, is important, the individual productivity of people is even more so.

"When you improve the quality and speed of information, you improve the decision-making process and the productivity of people. I don't know any group within a company that's more involved in this basic approach to productivity than the systems group," he said.

Retailers are now at the forefront of systems technology, he said. The retail industry has made many demands upon the technology of systems and systems people have responded, he added.

Many of the innovations in communications, optical scanning and minicomputers have been sparked by the needs of retailers, he noted.

"Whenever a system comes into conflict with the wants, needs, hopes, aspirations and personal freedoms of people, the system must be changed immediately, changed as necessary, and sometimes – impossible as it may seem – scrapped entirely," he stated.

AT&T Granted Extension For Response to Wyly Suit

NEW YORK – AT&T has until Nov. 22 to prepare its response to the antitrust suit filed against it by Wyly Corp.

The date extension was stipulated by both parties, according to an AT&T spokesman. AT&T's reply was to have been filed before Oct. 1.

When Wyly announced its decision to abandon its Data Transmission Co. (Datran) operations, it also filed suit in the U.S. District Court in Washington, D.C., seeking $285 million in damages from AT&T for allegedly keeping Datran out of the data transmission and digital data transmission services market in violation of antitrust laws [CW, Aug. 30].

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In Scientific Market, Trial Shows

IBM Wooed Two Large Users With Nonexistent System

By Catherine Arnst
Of the CW Staff

NEW YORK – Evidence in the U.S. vs. IBM antitrust trial has told the story of two users who were wooed by tales of an IBM system that did not yet exist and never would exist with the capabilities the corporation had promised.

In 1963, Bettis Atomic Laboratory and Knowles Atomic Laboratory, both operated for the U.S. Navy's nuclear submarine program, decided they wanted two large, fast scientific computers that would be compatible with each other.

A series of discussions were held with Control Data Corp. and the firm's 6600, announced in April 1962, became the leading contender for Bettis' and Knowles' scientific workload.

The 6600 was faster than anything else on the market at that time and its architecture, cooling system and circuitry design was unique, Robert Schmidt, CDC executive vice-president, testified recently. Delivery was set for mid-1967, he added.

IBM, however, began to notice CDC's growing dominance in the large scientific computer market at that time and did not plan to lose what it considered a prestige market, trial documents indicated.

At a meeting in Jenny Lake, Wyo., that year, IBM executives began to plan a series of machines that could compete with the 6600 in that marketplace [CW, Aug. 23].

IBM rushed plans for the 360/90 after it lost a bid to CDC from the U.S. Weather Bureau, documents showed. The Weather Bureau had chosen CDC's 6600 over two IBM 360/70s coupled with parallel disks because it was faster, cheaper and could be delivered sooner, Schmidt testified.

IBM management was already having difficulties with the Model 90, documents indicated. A memo written to IBM Board Chairman Thomas J. Watson in October 1963 warned the Model 90 project might not necessarily put IBM in a position to bid competitively.

In spite of that, however, no effort was spared to hold the scientific market pending the outcome of that project.

Bettis and Knowles became victims of this strategy, the documents indicated. At first CDC had been confident it would win the contract because its 6600 was faster than anything IBM had at that time.

However, in 1964, CDC began getting indications from its discussions with the labs that IBM was promising something better, Schmidt testified.

The labs wanted a guarantee that a faster follow-on computer would be forthcoming, Schmidt testified. However, CDC had not yet announced its 6800 and was reluctant to promise a machine it did not have.

IBM, however, did not feel reluctant about promising the Model 91, which had just been announced without complete product tests and an overly optimistic delivery schedule, the documents said.

IBM executive Paul Naplan described its design as "shooting an arrow into a wall and painting a bull's-eye around it," trial documents said.

In late 1964, Bettis and Knowles told CDC they had decided to go with IBM's offer of two 360/75s, presumably with two Model 91s to be delivered shortly thereafter, according to Schmidt.

The effects of rushed planning for the Model 90 series began to wreak havoc with IBM's production schedules, which continued to slip, according to Robert Desio, who was at that time IBM's manager of scientific marketing.

Sales restrictions had to be placed on the 91 and Bettis and Knowles decided to reopen negotiations with CDC.

The labs still wanted promises of a faster follow-on computer, however, and put pressure on CDC to give them that promise. CDC was desperate for the order because the mainframer had not received any orders for the 6600 since the initial four more than a year earlier, Schmidt testified.

In its original bid to Bettis and Knowles, CDC had quoted a price of $6 million for each 6600. However, by 1965 it had cut its price for the 6600s and two follow-on 6800s to a total cost of about $7 million.

Schmidt acknowledged this huge price cut was made partially to combat the intense competitive pressure it was feeling from IBM, which was at that time flooding the scientific market with salespeople in an attempt to hold the market.

Unfortunately, the two labs again found themselves in the situation of expecting a system that could not be delivered. The 6800 was not turning out as planned, and CDC decided to "face the music," Schmidt testified.

It went to the labs with the proposal that they drop their expectations for the 6800 and instead accept the 7600 when it was ready, Schmidt said. The labs agreed.

As for the Model 91, only 15 systems with that designation were ever delivered, testimony indicated.

Players of N.Y. Lottery Assured Duplicate Ticket Codes Routine

ALBANY, N.Y. – Despite reports that duplicate numbers had been found on winning $2 and $5 Empire Stakes instant lottery tickets, duplicate validation codes are apparently routine and cause no problem, according to John Quinn, the lottery's director.

The New York State lottery system was resumed recently after a total reorganization; ticket sales hit record numbers from the outset [CW, Sept. 27].

The validity codes, printed for ticket vendor use, were duplicated as a convenience to vendors in checking winners in the game, Quinn said.

No effort is made to prevent duplicate validation numbers in this lottery or in any state that uses an "instant" lottery system, he said.

"The important thing," Quinn pointed out, "is that the prizes are paid on the dollar amounts printed under the six wax spots, not on the validation numbers.

"Judging from the level sales are maintaining, New Yorkers are having fun with the game and have confidence in it. The design of the game is good and the tickets are secure," he said.

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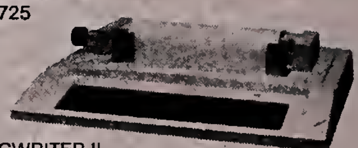
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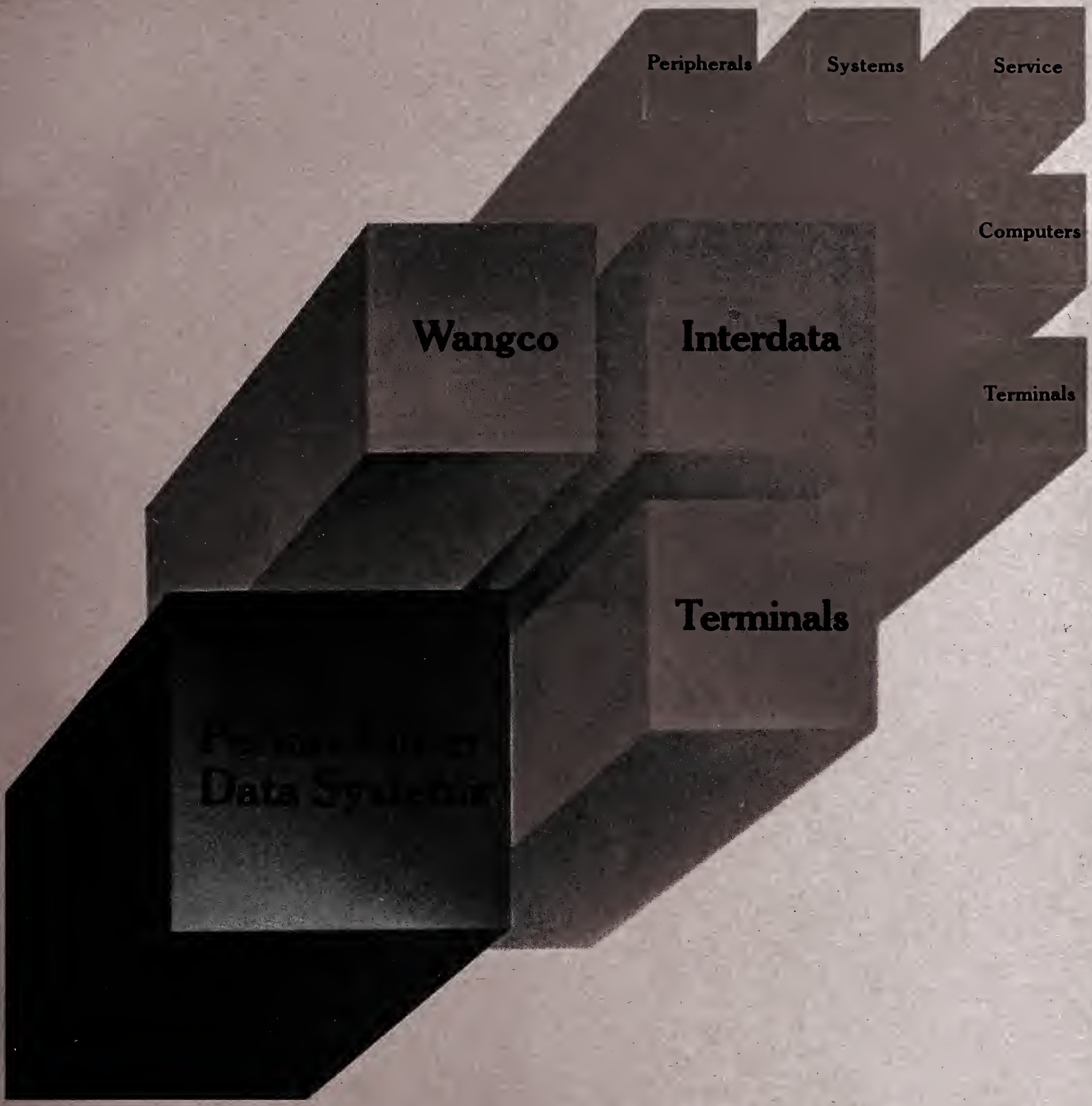

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FAPRS Provides One Source of Data on Federal Funds

By Edith Holmes
Of the CW Staff

WASHINGTON, D.C. – "Welcome to FAPRS: You are using a unique, self-teaching question-answer type of automated system which is designed to give rapid access to federal domestic assistance loan and grant program titles according to your needs and the information you provide . . ."

So begins the printout for the Federal Assistance Program Retrieval System (FAPRS) designed and developed by the U.S. Department of Agriculture's Rural Development Service.

Until recently, Congress was considering making FAPRS the basis for a single, national information system on federal assistance programs, and the General Services Administration was testing the system at four of its federal information centers across the country. However, the project has been tabled until after the new Congress meets in January [CW, Oct. 11].

Developed during 1975 and operational last March, FAPRS scans a data base of more than 600 funded federal domestic assistance programs and prints out a list of those funds for which an inquiring community appears to qualify. Included are funds for community facilities, housing, business and industrial development and planning and technical assistance, according to Paul R. Kugler, director of the Rural Development Service's Plans and Programs Staff.

Alternative to Manual

FAPRS represents an alternative to the *Catalog of Federal Domestic Assistance*, the manual of federal aid to state and local governments published since 1965.

Because FAPRS gives users a tailored list of only those programs for which they seem to qualify and which have been funded by Congress, the system goes several steps beyond the 1,100-page catalog, which simply details some 1,000 sources of federal funds, Kugler said.

In addition, the catalog is usually four months out of date, he noted. The automated system can be updated as quickly as changes are made in a program's description, funding or eligibility requirements.

FAPRS has the added advantage of being cost-effective, Kugler indicated. A manual search for the right grant or loan can take as long as 40 hours and cost as much as $250,000; the automated system can do the same job in 10 minutes for $6, he explained.

The only hardware a user needs is access to a terminal that is teletypewriter-compatible, has an acoustic coupler, operates at 300 bit/sec in half-duplex mode and has a printer to provide a hard copy of the program information, Kugler stated.

Users may access FAPRS through one of two time-sharing firms licensed by the Department of Agriculture to carry the service: General Electric Information Services and Service Bureau Co.

The cost of the system to the Agriculture Department thus far has been less than $30,000, and Kugler believes the system will break even on a yearly basis if it is used 18,000 times.

With a current average of 4,000 runs a month, he isn't worried about the financial aspects of FAPRS, he said.

System in Wide Use

Currently operating in 46 states through the Department of Agriculture's extension service, FAPRS has also been adopted by 10 state governments and by the Department of Health, Education and Welfare (HEW) in its regional and Washington offices.

The Old West Regional Commission is also using the system; the Library of Congress runs it for members of Congress. The House Information System – a 30-terminal test project currently going on in the House of Representatives – will soon offer FAPRS as one of its services, Kugler said.

Kugler and his full-time staff of five took the initiative for the development of this information system in December 1974 because they wanted people in the most rural and the most urban areas of the country to have equal access to information about federal funding.

During the summer of 1975, four "very dedicated" interns assigned to Kugler's staff did the basic research on all the federal assistance programs available. Lifting only the number and title of each program from the *Catalog of Federal Domestic Assistance*, they developed the rest of the information through interviews with each federal program manager.

That fall, Kugler's secretary, Norman Weetman, now data research and management assistant for Plans and Programs, wrote 30,000 lines of code with fewer than 50 errors and no formal DP training, Kugler said.

The system was operating by Jan. 6 of this year, and Kugler and his staff used a Hazeltine 2000 system with CRT, printer and tape cassette unit to test it.

In building data on the cassette unit, however, they discovered Hazeltine couldn't tell them how to interface the device to the time-sharing networks licensed to carry FAPRS. So the Plans and Program Staff developed its own interface protocol for the cassette unit and will make that procedure available to anyone who wants it, Kugler said.

FAPRS was formally announced on March 12, and Kugler described its reception as "tremendous." Today, his office averages 20 letters and 100 phone calls on the system each day.

Despite the recent setback in his goal to make FAPRS the basis for a national federal assistance information system, Kugler intends to go on with plans for a doubling of the categorical breakdown of federal programs contained in the system.

By February 1977, he hopes to have added education, employment, health and social services breakdowns as well.

Such entries will appeal to new markets like schools and hospitals, many of which already have terminal capability.

The enthusiasm for FAPRS extends beyond Kugler's staff and the Department of Agriculture. HEW, the Labor Department and the Community Services Administration have loaned personnel to add new programs to the system.

Kugler is pleased by this "high degree" of cooperation within government. "We need people who will move into the role of looking at computers from the point of view of the consumer," he said. "It takes a different kind of mentality to develop a system that anyone can run and that doesn't cost very much."

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Modeling System Helps New England Cut Energy Use

By Nancy French
Of the CW Staff

CAMBRIDGE, Mass. – The six New England states individually and as a region are using a sophisticated energy model operated jointly by MIT and IBM's Cambridge Scientific Center to help cut energy costs and plan for emergencies.

Developed in response to the oil embargo of 1973, the system was put on display at a recent conference on the MIT campus here, where it was discussed by John J. Donovan, associate professor of management sciences at MIT's Sloan School of Management and a principal designer of the system.

Donovan, who noted 70% of the region's energy comes from petroleum products compared with 45% for the nation as a whole, credited the New England Regional Commission (Nercom), a cooperative planning organization, as the umbrella agency under which the system is operated.

Simulates Dedicated Computers

The New England Energy Management Information System (Neemis) was designed to take advantage of the best programs and data bases available on any given energy problem. However, so far only IBM operating systems can be run on the system, Donovan said.

Its computational capability is based on IBM's Generalized Management Information System (GMIS) which uses the Virtual Machine Facility (VM/370) to simulate several dedicated computers on one system, he said.

Experimental software written by IBM and MIT permits the various simulated, or virtual, machines to communicate with each other.

The hardware consists of one IBM 370/158 with 2M bytes of main memory and 100M bytes of secondary storage on 2314 and 3330 disk drives. Planners in state energy offices using IBM 2741 console typewriters, some IBM 3270 CRTs and some Hazeltine CRTs are tied to the system by dial-up telephone lines, he explained.

However, the system manages five virtual machines executing different user-oriented programs. Among them are several text editors as well as Troll, an MIT-developed econometric language; TSP, an IBM experimental econometric language; E/Plan, an IBM econometric language embedded in APL; and PL/I.

It also simulates four virtual machines executing different data base languages, including Sequel and Query by Example, two IBM experimental relational query languages, as well as GIS and IMS, two commercially available IBM products, Donovan explained.

In addition to allowing models and data bases to communicate with each other on one computer and allowing programs to be transported from one computer to another, Neemis allows multiple groups working on the same problems to access the same data base, Donovan said.

GMIS architecture also allows decision makers to access and maintain data on several different data base management systems. Since answers often are needed quickly, and there is no time to transport these data models to a common system, GMIS allows multiple modeling and analytical systems and data bases to exist simultaneously, he said.

Because it is impossible to know precisely what data will be needed to cope with a specific problem, Neemis was designed to enable its users to quickly assimilate new data and then validate and integrate it into a readily accessible pool of information, according to Donovan.

Three types of data are presently on hand. The first is fuel supply characteristics and includes inventory, storage capacity, fuel flows, contracts and domestic vs. foreign fuel sources.

The second, energy demand characteristics, includes variables like fuel consumption by geographic area and selected historical and projected economic data, such as gross national product, interest rates, weather data and selected historical and projected population, housing and weather data.

The third type of data concerns constraints on air and water quality standards, entitlement programs, decontrol measures, legislation and Arab embargo information.

To date, Neemis has saved the state governments of this highly oil-dependent region more than $500 million in oil import fees and enabled them to develop effective energy conservation policies, Donovan said.

By running simulations of its public buildings on Neemis, Massachusetts has saved its taxpayers about $10 million in heating bills, according to Lt. Gov. Thomas P' O'Neill III.

In addition, the system has told policymakers New England homeowners can reduce energy consumption 11% by installing storm windows. Storm doors save 4%, he said.

Further, upgrading to a more efficient oil burner results in a reduction of approximately 9% in fuel consumption, according to Donovan. However, since it takes the typical homeowner five years to recoup the cost of a new oil burner and the average New Englander spends only five years in a house, policymakers will have a hard time selling homeowners on the idea of buying new oil burners. Thus planners know they cannot expect to actually save energy consumption here, Donovan explained.

And on Sept. 17, when the *Wall Street Journal* reported rumors of a 10% increase in oil prices by the Opec nations, Neemis staff members were able to project the hike would cost New England residential consumers an additional $88.8 million, commercial users an additional $110 million and industrial consumers an additional $71 million, Donovan said.

Finally, in response to the energy embargo of 1973, New England homeowners turned down thermostats and reduced consumption of home heating oil by 13%. However, because price is now the only deterrent to unnecessary consumption of energy, New Englanders haven't done so well, the model has shown recently.

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Editorials

Keep the Questions Coming

The Office of Telecommunications Policy (OTP) is part of the White House Executive Office. And when the OTP director pays a visit to the Justice Department, it is assumed questions are being asked in the name of the Administration.

That's all wrong, according to OTP Director Thomas Houser. He contends his visit to Justice shortly after he was appointed to his present post was simply a fact-finding expedition to gather background about the government's antitrust suit against AT&T.

Rep. Timothy Wirth (D-Colo.) disagrees. He feels Houser's visit borders on political interference by the Administration, as he has told Houser in a letter [CW, Oct. 11].

Wirth pointed out Houser was a partner in a Chicago law firm, Sidley and Austin, that still represents AT&T in the case. Wirth feels this previous position could color objectivity.

Officially, OTP stated the Administration has taken no position on the AT&T antitrust suit, which has gone virtually nowhere in the two years since it was filed.

Presumably the White House (and OTP) would welcome the antitrust suit and the often-ignored Justice Department antitrust staff might get some much-needed support. Instead, the Administration says nothing. And its presumed spokesman, Houser, visits Justice after expressing doubts about the economic foundations on which the suit is based.

Houser can't have it both ways. If he has no interest, he should stay away. If he wants to take a position, he should come out with a clear-cut statement that represents both the White House and OTP. His predecessor, John Eger, gave strong OTP support to the suit.

Instead Houser implied he has some kind of passing interest in this case. But, Donald Baker, Assistant U.S. Attorney General, is reluctant to show Houser too many documents related to the suit.

Baker has a good point. Who knows how much of the information Houser gathers is staying within OTP? And more importantly, how did someone like Houser, with entangling former alliances, ever get appointed and confirmed as OTP director?

Wirth should keep on asking questions.

A Step Backward

The new tax bill permitting states and local governments to use the Social Security number (SSN) as an identifier for administrative purposes [CW, Oct. 11] shows once again that privacy advocates cannot rest in their efforts.

The provision was not well thought out and was added to the tax measure almost as an afterthought. While there was some debate over the issue, the item was essentially buried within a huge bill covering many important subjects and this item never received the discussion it deserved.

Previously, when the use of the SSN as an identifier had received proper debate and discussion, Congress wisely ruled out the use of that number for such purposes.

Privacy advocates in Congress and outside should make sure there is proper debate and discussion when issues are taken up affecting our privacy.

Such important issues as the use of the SSN as an identifier should not be tacked onto other bills.

Mr. Supermarket Manager Moves Boldly Into the Point-of-Sale Electronics Age

Letters to the Editor

Offensive Advertisement by DG Inconsistent With High Standards

The Sept. 20 issue of *Computerworld* included a full-page advertisement by Data General Corp. (DG) which is not consistent with CW's usual high standards.

It is offensive to myself (and other readers with whom I have discussed it) for the following reasons:

- The "mother" seemed, at first glance, to be the only female in that picture. To reference a female colleague as "mother" lacks consideration – just as it would be inconsiderate to label a male employee as "father."
- Later, it became apparent the computer is the "mother." This is a misnomer and a disparaging use of an English word. Definitions of "mother" usually refer to "female," "reproductive," "nurturing," etc. Certainly the computer qualifies in none of these respects since it is inanimate.
- It is a sexist label. I seriously doubt CW would print "Your father needs help." And, of course, it would be no more (or less) accurate.

Please restore my confidence in CW by dropping or changing the advertisement.

Robert D. Tennyson
Minneapolis, Minn.

A Bunch of Elitist Claptrap

Herb Grosch's column titled "Sunk in Steerage" [CW, Oct. 4] was a bunch of elitist claptrap. I'm glad I had my boots on when I read it.

Herb, I don't give a damn what or how you want to eat or how you want to fly. Just don't force me to help pay for it.

You're not worth it.

Dave Blanchard
Santa Clara, Calif.

In a Former Age of Bigotry...

In a former age of bigotry, would Herb Grosch say the colored should sit at the back of the bus?

John T. Connelly
Wilmette, Ill.

Emphasize Fact, Not Fiction

How long must it continue? First Kenniston W. Lord Jr. and now Alan Taylor [CW, Sept. 6]. The Los Angeles City check theft was not a computer crime. To refer to it as such is a patent fabrication.

Both Taylor and Lord should devote less time to using fictitious events for justifying their opinions and try to report facts instead.

Only when those in the DP field admit their computers are nothing more than glorified adding machines will they begin to become professionals.

Andrew H. Olson
Sunnyvale, Calif.

A Challenge to Respond

In response to the references made to the negative reaction to Ken Kolence's methodology by Barry A. Stevens [CW, Sept. 20] and Roger P. Novach [Oct. 4] in their respective articles on "Software Physics," I offer the following:

"... The structure [of software physics] remains as a challenge to them to present their own positions in an equally rigorous form." (From the preface of *An Introduction to Software Physics* by Kenneth W. Kolence.)

John Bennett
Baltimore, Md.

Data Past

Five Years Ago
Oct. 20, 1971

SANTA CLARA, Calif. – Memorex introduced the first complete IBM 3330 replacement system with a plug-compatible drive. The 3670 disk storage system included a 671 controller with up to eight 670 drives and had an average access time of 27 msec compared with the 3330's 30 msec.

– – –

VERO BEACH, Fla. – IBM announced it was ready to buy operational programs from outside users for resale under license to other users. The company established a class of software called Installed User Programs (IUP). The IUPs covered as wide a range of CPUs and uses as the Field Developed Programs (FDP) and were available under the same "ground rules" of limited cost to the user and limited support from IBM that separated FDPs from IBM's standard Program Products.

Eight Years Ago
Oct. 16, 1968

WELLESLEY HILLS, Mass. – Honeywell, Inc. introduced four competitive disk drives for direct access and mass information storage, four small disk-oriented computer systems and four disk packs. Type 278, the top of the disk drive line, was designed to compete with the IBM 2314; the Type 275 was meant to compete with the IBM 2311.

– – –

NEW YORK – The Association of Data Processing Service Organizations (Adapso) announced it would expand its membership to include software firms. A previous restriction that an organization "maintain physical control of and prime responsibility for its data processing equipment, facilities and methods" was dropped.

DPMA Continues Its Ostrich Stance on Certification

. . . And in This Corner

By Kenniston W. Lord Jr.

Special to Computerworld

Continuing its "head in the sand" stance, the Executive Council of the Data Processing Management Association (DPMA) has, for the second consecutive year, produced a two-page publicity release supporting voluntary certification, but opposing certification or licensing legislation.

My, but it takes a lot of courage to take a public stand against an idea more than two years after the idea has been advanced and more than a year after the idea has been soundly defeated, if "defeated" is really the word to describe it.

Quoting from the press release: "The [DPMA] supports the concept of voluntary certification as *a* valid and useful way to recognize expertise and professional attitude in the field of 'Information Processing' and reaffirms its support of the [Certificate in Data Processing] 'CDP' as the most appropriate certification program currently available."

I was the one who emphasized "a," for I would like my readers to note that DPMA did not say "*the* valued and useful way to recognize . . ." It's important to note that oversight, for the Executive Council of DPMA isn't about to take any stand which would cause its "beginning to dwindle" membership to be critical, particularly those who do not hold or who do not revere the CDP.

It should be noted that only a year ago DPMA was advertising it represented more than 22,000 members. This press release indicated a loss of 2,000 people.

Measure of Expertise . . .

It is amusing to note DPMA supports the CDP as a measure of expertise and professional attitude, for DPMA has waffled on those issues for years, particularly when the program, which was losing money in huge sums, was under its control.

In print, early DPMA President Billy Field thanked participants for their contribution to professionalism. In person, then-Education Director Don MacPherson stated professionalism was never the intent of the CDP program.

When the program was turned over to the Institute for Certified Computer Professionals (ICCP), then-Chairman of the Certification Council Erir Ustad, CDP, stated the objective of the exam was to attest to the knowledge needed by a DP manager.

Nobody, but nobody, including the board of directors of the ICCP, has ever indicated the CDP is a measure of expertise and professional attitude. And to state it is "the most appropriate certification program currently available" is somewhat akin to saying the sun will rise every morning. Once again, the status-quo organization has played it safe.

The publicity release continued: "DPMA further believes that a method of self-regulation, based on a specified set of standard practices and ethics, is the logical next step in the growth of our profession and the protection of the public interest, and we state our willingness to aid in the development of such standards and regulation method."

Beautiful! Yes, DPMA, it is the "logical next step" and one that is overdue by at least 10 years. How come you are just now awakening to the problem? Did you finally recognize you can no longer duck the issue?

Did you finally recognize licensing is not now – nor was ever – the real issue? If you did, why do you cloak your publicity in the garb of an outmoded argument? If you did, why is licensing a prime topic on your Las Vegas agenda?

Let's be realistic, folks. Standards, as we have "practiced" them, have been great for the hardware and software vendors, but they weren't very effective for Frank Booth and Steve Karagianis.

A national mandatory standard must be developed, sort of a Uniform Code for Data Processing (UCDP). And the procedures necessary to implement and enforce such a standard must be put in place, soon.

The concept of voluntary certification and self-regulation has been with us since the beginning and it has never worked. Yet the DPMA Executive Council, the DPMA organization at large and perhaps other organizations as well continue to bury their heads in the sand, convinced the issue will go away. It will not.

Interestingly, the DPMA Executive Council continues to sit on both sides of the fence, as its press release went on to state "such self-regulation should be designed to facilitate the administration of a licensing procedure."

Thus, while unwilling to take the leadership to develop mandatory standards and licensing procedures, it is nonetheless willing to admit the inevitability of such occurrences.

But then the crunch finally came. DPMA stated, "DPMA, however, is opposed at this time to the enactment of legislation which would require certification or licensing as a legal necessity for employment, operation, supervision or management of any area of endeavor within the field of information processing."

What a caveat! How come you didn't extend your caveat to cover the public, DPMA? Why don't you send a copy of your press release to Frank Booth's widow? Or to Steve Karagianis' mother?

And DPMA's coup de grace is this: "DPMA directs attention to the principles espoused in our organization's Code of Ethics and Standards of Ethical Professional Practice regarding individuals' rights of privacy and calls upon information processing practitioners [note that it did not say "professionals"] to follow these principles, in the best interests of the profession and of society."

Such a rousing finale is to be expected of DPMA. It has said "everybody ought to do right; ought to do good, decent, honest and ethical things." Reality, however, indicates otherwise. And even DPMA cannot continue to bury its head in the sand forever.

There is a world of difference between a public suspecting it is protected at the hands of well-meaning entrepreneurs and of its knowing, beyond the shadow of a doubt, such protection exists. You didn't do it again this time, DPMA, and you have continued your quarter-century tradition of avoiding the issue.

And you, my readers, many of whom are DPMA members or members of organizations which have adopted equally strong stands, do you see what your leadership is doing? Do you see where it is leading you? Will you be prepared for the backlash?

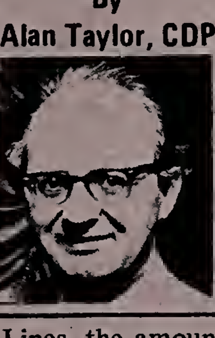
Those of you headed for Info/Expo Las Vegas have a golden opportunity in your hands, an opportunity to let DPMA and the entire information-processing industry know, in no uncertain terms, the issue is real; it is vital to the development of the industry; and it can no longer be ignored.

Justification for Overbooking Based on Brittle Data

The Taylor Report

By

Alan Taylor, CDP



"Brittle" data is something which few DPers really worry about – unless they are statisticians. Brittle data is that item which appears to be both studied and correct. It is used until something better comes along or, more dramatically and more usually, until something happens to make its validity suspect.

A rather good instance of brittle data which came to my attention recently was the argument that the overbooking practice was necessary; otherwise, the airlines would have to increase their fares substantially to make up the difference in revenue. According to United Air Lines, the amount was about $50 million/year for that airline alone.

Fifty million dollars is a substantial sum. The argument appeared to match the 1967 Civil Aeronautics Board (CAB) ruling that recognized the value of overbooking practices to the traveling public.

At that time, the CAB stated the following: "In our view, any realistic appraisal of the practice of overbooking leads to the conclusion that, while it results in oversales, it also contributes to flexibility and freedom in securing, changing and canceling reservations.

"Thus, any rigid controls over overbooking, as now practiced, would reduce load factors and the additional cost would ultimately have to be borne by the traveling public."

In light of the above, it can be seen that the present reservations systems of the airline carriers generally benefit the traveling public.

Everything in the garden was rosy. In considering overbooking, this assumed loss of revenue was a major point in my mind – until I found the basis for that $50 million/year figure from United.

The basis follows: "The value of the Space Planning program (which authorizes the overbooking and sets limits) is clearly evidenced by its performance record. In 1974 and 1975, United's Space Planning created a total of 1,997,285 which would not have been available if overbookings were not permitted.

"A total of 1,559,062 passengers were given confirmed reservations and accommodated in these seats of the flights of their choice during this period. Using the 1975 average fare paid of $63.65, these 1,559,062 passengers contributed $99,233,296 in revenue, much of which would otherwise have been lost."

Now the picture is different. In detail, the original claim of $50 million/year isn't even there; rather, the claim is made that much of the $99,233,296 would have been lost. However, no idea of how much is given.

The $50 million can now be considered brittle data.

Life Cycle of Brittle Data

Originally, the use of the figure, or its equivalent, was to bolster the idea overbooking was valuable and had been studied in detail. This is similar to the positions taken by many DPers who argue in favor of the performance of various computerized projects. It is one which often wins by reducing the argument to its simplest grounds, as the overbooking argument did in the 1967 CAB ruling.

Unfortunately, because the basic data is brittle, it becomes embedded in the system, almost as dogma. Later, it can begin to show its own weakness and much more.

For instance, the United statement indicated not only that the $50 million/year isn't a valid picture but, at best, United has not yet studied the problem sufficiently to come up with any reliable evaluation.

At worst, of course, is the idea it has studied it, knows the real answers and dares not publish them because they disprove the basic claim.

Elementary Factor Ignored

The lack of study on United's part is based on the fact one elementary factor is totally missing and is being ignored. Such ignoring of the factor would not have occurred if it had been studied.

The missing factor concerns the revenue that would have been gained by United if overbooking was generally stopped – not by United alone, but by everybody.

When a passenger tries to book and can't get a confirmed seat, he doesn't just stay at home. Nor does he just restrict his attention to the airline concerned (which appears to be the case that United references in its admission that only some of the revenue would have been lost). The passenger goes out and tries the other airlines.

However, United analysis just doesn't take this into account. At the most, it shows that if United were to unilaterally stop overbooking and if everyone who tried to book on full planes stayed at home or flew on other airlines, then the revenue shortfall would be under $50 million/year. This differs greatly from the statement given.

Ruling Torn Apart

Now, with the knowledge that in 1976 United hadn't even started studying the problem, I can go back to the 1967 CAB item and really tear it apart using its first few words: "In our view, any realistic appraisal of the practice of overbooking . . ."

Good grief, if United doesn't have a realistic appraisal in 1976 and must rely on the type of "evidence" it uses about computer-created seats, there were no realistic studies supporting overbooking back in 1967. (There may have been some studies against it, but the CAB pushed them the other way.)

So, the whole basis of overbooking justification has come unraveled – it was just something easy to do and easy to justify and now turns out to be easy to break. The problem is that, like a building built on brittle girders, once the break comes it is not restricted. The problem is not restricted to overbooking only, it puts into question all the airlines studies on just about anything.

Brittle Justification

That is the problem of brittle data. Computer systems, particularly sophisticated ones like the airlines reservations systems, have to justify their existence every now and then. All DP managers know this. However, the impact of using brittle data to justify a system is simply too far-reaching to be permitted.

Justification simplifications should err on the side of leaving out any values that can't be developed in detail and validated. To do more and to gloss over ignorance is simply to build the installation on raised, brittle floors. And that just isn't good practice.

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Software Ruling Gives Cue on Protection From Taxes

From a Legal Viewpoint

By Roy N. Freed

Special to Computerworld

A major advance was made in the legal treatment of computer programs with the June ruling of the Supreme Court of Tennessee that they are not subject to the Tennessee sales tax.

This important decision closely followed the earlier ruling of the Federal Court for the District of Columbia which stated computer programs are not subject to the tangible personal property tax of that jurisdiction. The case is known as Commerce Union Bank vs. George M. Tidwell, Commissioner of Revenue, State of Tennessee.

The Tennessee court arrived at its ruling essentially by equating the term "computer program" with information and recognizing information can be introduced into a computer not only through the use of punched cards or magnetic tapes or disks, but also by transmitting signals directly, over electronic telecommunications, from the supplier to the CPU of the customer.

The ultimate result of the deliberations of the Tennessee court is entire compatible with the earlier suggestions in these columns that computer programs be identified as processes for processing information, analogous to industrial processes for refining petroleum, producing chemicals and the like.

Use of Compatible Language

Suppliers of computer programs who would like to spare their customers the burden of the sales tax and customers who would like to protect themselves in that respect should reexamine the agreement forms used for those transactions. They should take the cue from the ruling and use language that will be compatible with the ultimate result in that case.

It is essential to recognize agreements are, in many respects, essentially scenarios to courts and tax collectors. So identified, they should be utilized in order to provide the basis for desired legal results.

It is much easier to argue a legal case when the underlying documents are entirely compatible with the position sought to be presented than when they have to be explained.

Key Legal Areas

As the legal treatment of software programs in the tax area evolves actively, it is essential to direct attention to two other key legal areas relating to that subject matter. One is the matter of protecting the proprietary rights in computer programs. The other is allocating legal liabilities that might arise from the use of computer programs.

Despite the persistence of a hearty band of software suppliers who seem to prefer patenting, a broad consensus appears to be developing in favor of the protection of trade secrets.

That approach is entirely compatible with the favorable tax ruling discussed above. Where that type of protection is desired, it is essential to create the appropriate legal basis with the proper language in the agreement relating to nondisclosure and nontransfer without authorization of the owner of the property.

The liability area probably is substantially more troublesome because of the rapid expansion of liability exposure generally under our law.

Impossible to Control Rights

Although it is possible, by careful legal draftsmanship, to allocate liability between parties to a transaction, it is impossible to control rights that might be enjoyed by persons outside the transaction who could be affected by malfunctions in computer programs.

This is so-called third-person liability, which is being experienced with severe adverse consequences by suppliers of products.

One approach is to protect oneself with insurance, which is products liability coverage in the case of items clearly identifiable as products. That insurance is becoming extremely expensive and, in many cases, even unavailable.

Big Question Mark

The availability to software suppliers is a big question mark. At the very least, the matter of exposure to third persons must be treated in the agreements under which computer programs are made available by suppliers.

Despite criticisms of earlier columns that discussed the various categories of properties and transactions and their legal consequences, it is clear our law reflects a whole series of categories and imposes on us the duty to devise our relationships in light of the treatment of the various categories.

Object as we might, the failure to recognize that fact can have consequences too serious to contemplate.

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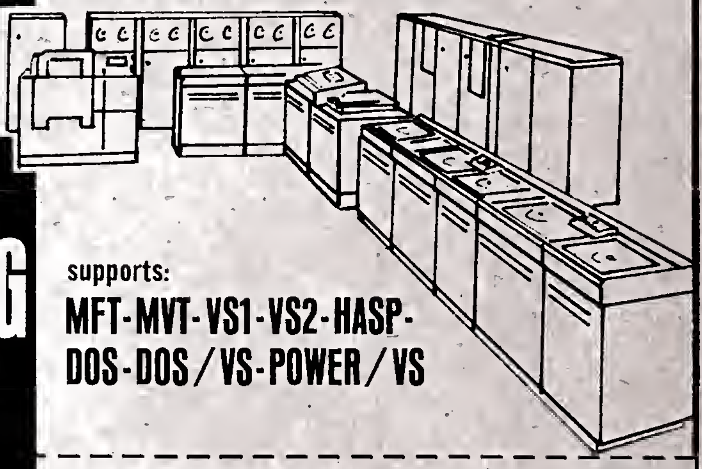

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DP Manager Claims

Logic of Software Physics Gives Guides to Change

By Edward L. Prichard
Special to Computerworld

Every DP manager knows what capacity is – it is what he answers to his management for in terms of cost and what he answers to his users for in terms of performance.

The costs of his configuration are real; they are the monthly checks to IBM, Univac, Itel, et.al., salaries, facility rent, etc.

Performance is harder to express, but it is often seen by his users as service level (turnaround, response time), availability (uptime) and charges (or rates) for service.

The DP manager knows these performance parameters and the total workload must be supported by a specific configuration of hardware, software and DP professionals. The costs of this configuration determine his rates and charges to users.

These charges must be competitive or users desert, so hard constraints are placed on the configuration extent.

Mediating between workload, availability and service level and their attendant costs is what DP managers do – with varying degrees of success – for a living.

Handling the Tools

In other emerging technologies, the area between the artist and the bumbler is historically filled by the emergence of technique, methodology. The work of Taylor in industrial engineering provided the factory manager of the early 20th Century with techniques to rationalize and control the manufacturing process scientifically rather than intuitively. Can such examples serve as a guide to more systematic methods for DP management?

We have been getting some help of late. Eight years ago, Kenneth Kolence offered us the first commercial software monitors; Dudley Warner provided the first commercial hardware monitor.

To the DP manager, these tools are equivalent to Taylor's stopwatch. But how do we *use* these new measurement tools?

What we need is a methodology, a structure to relate all the complicated, unintuitive factors of our measurements to traditional management goals and programs: productivity, return on investment, low cost per service unit, budgets, revenues, business plans.

Kolence now appears again with an offering called capacity management – "the ongoing process of determining the capacity requirements of the workload and assuring that it is provided at minimum cost subject to throughput or response time, reliability and related constraints."

Determining the Workload

Of course. But how to determine the workload in any useful sense? And how to determine the useful capacity of a given set of equipment?

Kolence's answer is, I believe, his brightest contribution. Computers are machines that run software; it is the software executed on a given configuration that produces results or services billable to a user.

The results justify – or fail to justify – the configuration. Create a quantitative science of software behavior and you have a means of relating the results of the measurement tools to the DP management task: an adequate configuration at the least cost.

Kolence calls this science "software physics." Underlying it is the assumption "the fundamental concepts of natural science are wholly applicable to the problems of computer management. It is this assumption which leads to the use of the word *physics*."

Drawing on traditional science, Kolence identifies three basic criteria: The theory must simplify and unify empirical observations (measurements); it must predict the values of such observations (forecasts); and it must be based on common and universal concepts that are valid regardless of how or where they are used and that do not change when applied to specific configurations of different types of hardware and software (universally applicable).

The accompanying description of Ken Kolence's theory of "software physics" and some of the values the author sees in the theory was triggered by Barry Stevens' article, " 'Software Physics' Standardizes DP Operations" [CW, Sept. 20].

Kolence then makes a fundamental definition of the work performed by computer systems: "A processor performs one unit of software work *on* a storage medium when one byte is transferred to that storage medium." Processor and storage medium are central concepts.

The class of processors includes CPUs, tape drives, card punches, device controllers, channels and all other such equipment that moves bytes. A storage medium includes main memory, tape, disk surfaces, cards, printer paper and

(Continued on Page 20)

CRT-Based Data Entry Operation Handled by Packages for PDP-11

LEXINGTON, Mass. – The KDSS and TAM data entry packages from Evans Griffiths and Hart, Inc. (EGH) for Digital Equipment Corp. PDP-11s under RSTS/E include a declarative language for CRT screen formatting and can run concurrently with other RSTS/E applications, EGH said.

KDSS is a self-contained key-to-disk data entry subsystem, the vendor said. It has a set of facilities for entry, verification and examination/modification of batches of records and for reformatting that data on output, a spokesman added.

Other capabilities reportedly include support for creation and modification of input and output format specifications by a data entry supervisor and for supervisor control over the data entry process.

These features make KDSS comparable to the "most elaborate" stand-alone key-to-disk entry currently available, EGH claimed.

TAM is said to have essentially the same set of facilities as KDSS for specifying screen formats and edits "except that the layer of mechanism" which makes KDSS look like a self-contained key-to-disk system is not in TAM, according to EGH.

TAM is intended to be a terminal-handling module for use with RSTS/E applications which have an on-line multi-CRT transaction processing flavor. This package signals which format is needed at what terminal and then handles the interaction between operator and terminal until the format has been completely executed, the spokesman explained.

In both KDSS and TAM, the utilities are implemented in Basic-Plus while the portion of the system that executes the formats, thus controlling the operator-terminal interaction, is in PDP-11 Assembly language and installed under RSTS/E as a "runtime system."

Both KDSS and TAM will be updated later this fall to mesh with DEC's release of Version 6B on RSTS/E. A perpetual license for TAM costs $5,000; KDSS is available for $7,500.

EGH is at 1844 Massachusetts Ave., Lexington, Mass. 02173.

CDC Net Adds Star Service

MINNEAPOLIS – A "super" computer and the technical support staff to help users work with it have been introduced by Control Data Corp. (CDC) as extensions to the company's remote-computing services.

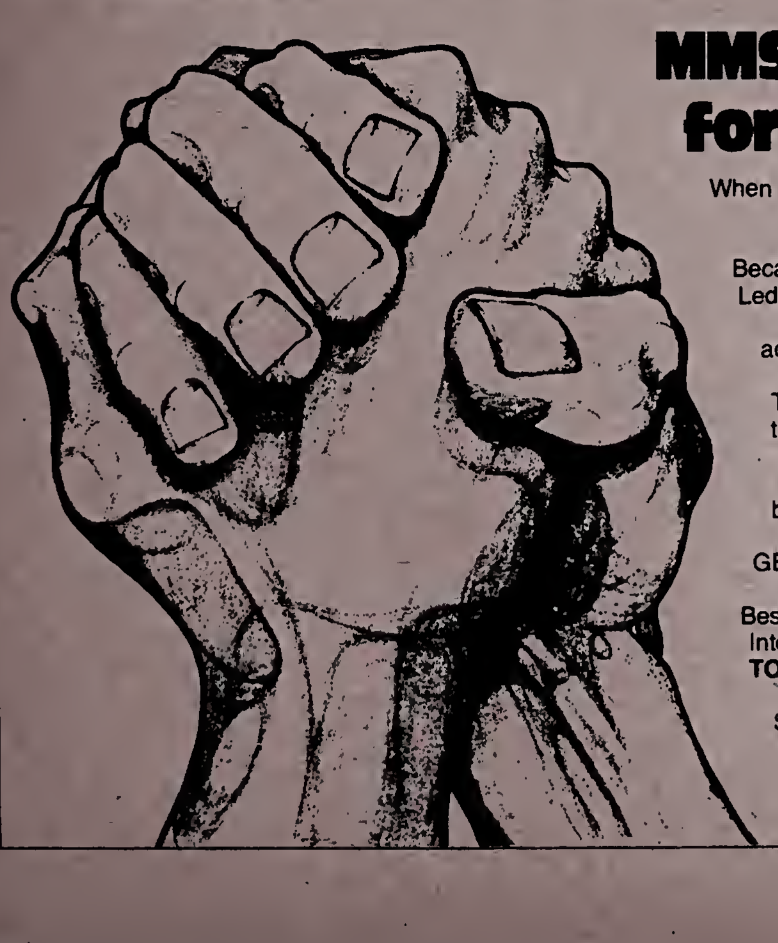
A CDC Star 100 computer with a 512K 64-bit-word main memory and a CDC 6400 as a front-end communications processor is now available to work on problems previously considered too costly – or even impossible – to solve with existing CPUs, according to a network spokesman.

The Star achieves high speeds through use of vector technology in which vast streams of data are processed simultaneously, compared with conventional computers which must handle instructions sequentially, he explained.

Developing or modifying programs to use this technology can be difficult, however, and that is why CDC feels the availability of the support staff is initially equally important as the availability of the hardware, he added.

Programming languages currently on the system include Star-Fortran (an enhanced implementation of ANS Fortran '66) and Meta Assembler with a loader, updating routines and "various" utilities also available.

More information is available from CDC at Box 0, Minneapolis, Minn. 55440.



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Software Physics Logic Supports Manager: Prichard

(Continued from Page 19)

other equipment that stores bytes.

Concentrating his theory on the thing moved, a "byte" or any arbitrary group of bits, Kolence defines two of the three basic quantities of software physics: work (or energy) and storage potential (or realization).

The final required quantity is time – execution time. From these properties alone all other relations of software physics follow, including software power, power usage and maximum configuration power.

Two important measures emerge: The natural forecast unit (NFU) is the unit measure of the *product* produced by the unit of software executed.

An NFU can be a paycheck printed, a warehouse inventory report generated, a transmission to or from a terminal, sets of data points plotted, mathematical elements computed – whatever the user gets out of the configuration when he runs his software on it.

The software work vector, Kolence's second measure, is an ordered list of software work per NFU by the equipment classes used by the unit of software, i.e., how much tape work, disk work or CPU work, for example, to produce a specific unit of product.

Thus equipped, with software physics a systems person can trace the effects of any unit of software executed on the configuration and determine its demand on capacity as it flows through the system.

He can relate measurements made on the configuration to the unit of software executed while the measurements were taken.

From the NFU can be determined the capacity requirements of the software in terms of how the user plans his use of the system. The system work performed by each configuration equipment class can be expressed as the corresponding software work vectors.

From the aggregate of all NFUs and software work vectors can be calculated the total software workload and the total effective system power which then can be compared to maximum potential system power by equipment class and by total configuration.

This technique may be extended by any level of detail required by a facility, including not only the subconfigurations of equipment by class (and cost), but also the support software contributions such as operating systems, spooling programs, data base systems and the staffs to maintain them.

Control for Manager

What does a DP manager do with these things? What does capacity management by software physics give him?

It gives him control of the software workload process; it allows him to plan for the capacity to support it, but only when required.

Software physics supplies the DP manager with defensible and comprehensible facility plans and budgets – comprehensible because they can be set in terms of products understandable by his users and his management.

It allows him to stretch his configuration resources further; a computer configuration often can be squeezed like a sponge if one knows where to squeeze.

With capacity management, the DP manager can deal more rationally with the problems of "fluctuating capacity." It is one thing to observe a saturated system at noon on Mondays, another to discover by measurements and adroit tuning of workloads that he can recover 20% of his capacity during that same period. Many a new CPU has been ordered on the strength of the first observation alone.

If capacity extensions are needed, Kolence's methods give the DP manager an independence of action so he can plan for these improvements in ways compatible with objectives and financial programs of his larger organization; he can behave like the other businessmen in his company.

Charge-Out System

On these elements can be built the complete charge-out system. A user's charges can be traced down to his partial use of the lowliest component of the configuration or can be stated in terms that have meaning to him, such as cost per paycheck generated or cost per inventory report.

Quite apart from its utility as a configuration planner, the potential of software physics for better charge-out systems cannot be overemphasized.

Prof. Richard L. Nolan of Harvard presented the results of his research of charge-out systems in his book, *Management Accounting and Control of Data Processing*. One conclusion is key to this discussion: the inevitability of full charge-out systems for all DP organizations better able to relate DP charges to the larger financial objectives of the organization. Software physics is well-suited to meet these developing requirements.

Applicable as It Stands

I do not think Kolence believes his science or software behavior is yet complete. Some exceptions can be made to his definition of software work as being adequate for a complete theory that would ultimately relate software work to instruction set power, to informational entropy or some such.

But as it exists now, software physics in quite applicable to the major problems of DP management. Most fortunately, it is eminently teachable and an excellent method for getting systems people and cost accountants to agree on methods of supporting the financial goals of the larger organization from within the DP resource. That alone is quite an achievement.

A cautionary word to DP managers: Capacity management is not a packaged, proprietary set of programs; software physics is not another set of software monitors and report generators.

Kolence's works are blueprints and guidelines for change in an organization based on sound principles of organizational structure.

In DP management, this structure has a high technological content; Kolence has assimilated this technology into the more general principles of cost accounting, standard costing, charge-out and management planning and control.

Prichard is director of the Data Processing Authority in Portland, Ore., and a graduate of courses at Kolence's Institute of Software Engineering.

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Cullinane Information System 1:00-3:00 p.m.

An introduction to the direction the Cullinane Corporation is taking in providing their clients with a complete information system. Cullinane developments include a Data Dictionary, The SHADOW II Communications Monitor, On-Line Query System, Distributed Data Processing and Mini-Computer versions of IDMS. Also covered will be the CULPRIT Retrieval System and user department versions such as EDP-AUDITOR and EEO-AFFIRMATIVE ACTION REPORTER.

Social 3:00-4:00 p.m.

Opportunity to discuss specific questions in depth with members of the Cullinane Corporation Technical and Management Staffs in a relaxed and casual environment.

Seminar Leaders

Robert J. Davis — Mr. Davis is Regional Marketing Manager for Database Systems. He has extensive experience with most aspects of database system design and usage, and has held key positions with both IBM and CINCOM. He is responsible for the marketing of database products in the U.S. and Canada, analyzing competitive products, and finding new markets for database technology. Mr. Davis holds a B.S. degree from the University of Akron.

William E. Linn — Dr. Linn is a member of the Cullinane Corporation Senior Technical Staff. His responsibilities include IDMS training, database consulting and technical marketing support. He was previously with Southern Railway System in Atlanta where he was deeply involved with database administration activities with IDMS. He has his Ph.D. in Computer Science from the University of Michigan and has been associated with the Georgia Institute of Technology teaching data structures and list processing techniques.

Raymond J. Nawara — Mr. Nawara is Southwest/Plains Area Manager of Cullinane Corporation. He has had extensive experience with the design of health and patient-care systems. Previously he was the Data Base Administrator at the Health and Hospitals Governing Commission of Cook County, Illinois where he had extensive experience using IMS. He has consulted in Database Applications for a variety of clients. Mr. Nawara is a graduate of the University of Houston with a major in Mathematics and Computer Sciences.

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Security Package Enhanced

SAN FRANCISCO – Facilities for shared password data sets, improved Time Sharing Option (TSO) functions and protection of data sets by high-level indexes will highlight an IBM OS/VS2-oriented update of the Data Access Security (DAS) package, according to the vendor, Tesseract Corp.

Other enhancements in DAS II will provide improved protection of system data sets, improved tape-handling functions and Volume Table of Contents (Vtoc) protection, as well as a freeform access protection language, the company said.

The access protection language controls security beyond the password level, a spokesman added. It allows the user to restrict the number of accesses to a protected data set or to limit accesses to a specified period of time during the day, he said.

Otherwise, accesses might be limited, for example, to batch or TSO jobs only, to specific named jobs, TSO users or programs or to processing taking place within specified job-accounting parameters, he added.

Most of the changes are made possible because DAS II is a rewrite of IBM's password facility, the spokesman explained. The original DAS built the password from components of the Job Control Language and then provided it to the existing password facility in IBM's OS, he added.

Scheduled for release in the first quarter of 1977 for OS/SVS, DAS II will be adapted to other versions of the operating system later in the year, Tesseract said.

DAS II will cost $8,192; the earlier DAS is still available for $6,500, the company noted from 101 Howard St., San Francisco, Calif. 94120.

Exec 8 Used

DBMS for Univac 1100s Updated

AUSTIN, Texas – An update of the Univac 1100-oriented version of the System 2000 data base management system (DBMS) from MRI Systems Corp. is said to take advantage of "the latest Univac software technology, including the Exec 8 common banking feature."

"Banking" is a Univac technique for controlling the amount of program code and data in main memory at any one time, according to MRI. "Common banking" provides a mechanism for optimum use of memory by many independent run units, a company spokesman added.

With the Univac feature, only the segment of code actually being accessed must be in memory. The reentrant code in System 2000's Univac Version 2.80 allows many users to work with the same segment of code concurrently, thus reducing memory requirements even more, MRI claimed.

The DBMS supports both multiuser and multithread operations, including concurrent updating by several users. Previously, MRI noted, only retrievals could be made in a multiuser environment.

A host language interface load optimization feature has been created and MRI has also made a major enhancement to the system by modifying buffer sizes to match the data recording sector size for the Univac mass storage disk device.

Other enhancements are said to include a reduction of resources used to remove pointers, creation of improved indexes for large data bases and optimization of the hierarchical table maintenance routines for "tree" removals.

In common with other versions of System 2000, the cost of Version 2.80 varies with the options selected, ranges between $30,000 and $110,000 and "typically falls about halfway up that scale," the spokesman added. MRI can be reached through P.O. Box 9968, Austin, Texas 78766.

Two CPE Groups Set November Meetings

DP professionals and others interested in computer performance evaluation (CPE) can attend major user group meetings on successive weeks in November and see a lot of the U.S. in between.

The government-oriented Computer Performance Evaluation Users Group (CPEUG) will gather in San Diego, Calif., Nov. 8-12 to hear papers on system measurement, modeling, interactive and time-sharing system performance and statistical approaches to CPE.

The meeting at the Shelter Island Inn will include tutorial sessions on the major subdisciplines of CPE and a vendor session focusing on commercially available products, according to CPEUG chairman Richard Dunlavey of the National Bureau of Standards (NBS).

Registration – not including hotel accommodations – is $35 and should be sent to CPEUG, NBS, A265/Technology Bldg., Washington, D.C. 20234.

A week later, from Nov. 16-19, the Computer Measurement Group (CMG) will hold its national meeting at the Fairmont Colony Square Hotel in Atlanta. This gathering will include presentation of the A.A. Michelson award to the person who has made the most significant contribution to CPE.

Using "Performance Is Everybody's Business" as its theme, this conference will also include papers, tutorial sessions and panel discussions on both the management and technology of CPE.

As at CPEUG, the meeting will provide time for vendor seminars, according to the program chairman, Dr. David Lindsay of the U.S. Federal CPE and Simulation Center (Fedsim).

Early registration for the Atlanta meeting ($80) may be sent to the attention of Bernard Lichtig at 6118 Bollinger Road, San Jose, Calif. 95129.

IBM Macros Package Aids User Training

WHITE PLAINS, N.Y. – The On-Line Application Simulation Macros package, developed by Shell Oil and now available from IBM, can be used to help train operators in most of their tasks through simulation of a live environment without accessing live data, IBM said.

The package requires the Interactive Training System software and one of several communications handlers.

Cataloged as product 5796-AJZ, the macros can be licensed for $580.

Background photographed near Dornie, Scotland.

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3M COMPANY

Remote Audio Response Service, User's Own CPU Linked to Ease Order Entry Chores at N.J. Firm

SOMERVILLE, N.J. – It isn't every day a company installs an on-line order entry system, enlarges the scope of its communications system and projects a savings of thousands of dollars per year.

That's what's happening here at Hoechst-Roussel Pharmaceuticals, Inc. (HRPI), a subsidiary of American Hoechst Corp., where an on-line order entry system – based on a remote audio response service provided by Rapidata, Inc. – is replacing a segment of a manual order-taking operation.

"Not only do the orders process into our IBM 370/158 faster," Joseph Macaluso, manager of information systems, explained, "but errors are reduced because there are no transcription steps between the person ordering our product and the computer."

The Rapidvoice service is the latest addition to HRPI's comprehensive sales reporting and analysis systems. "Our job is to help the sales force sell more and penetrate our marketplace," Macaluso said. "Collecting and filling outstanding orders faster helps both our customers and our sales force."

Turnaround Tied Up

The Pharmaceuticals Division was processing 350 to 500 orders on a daily basis. With increasing delays in mail service, an increasing portion of HRPI's customers turned to the telephone to speed up order turnaround.

This development tied up an order-taking department to the extent that many customer calls were not getting through the first time they were dialed, Macaluso recalled. More importantly, he said, an entire department was limited to order taking, impacting its abilities to react to customer problems.

The company asked Rapidata to program Rapidvoice with a special vocabulary to request and verify with the caller the important ordering data. Over 50 product lines, sizes and quantities were encoded to allow the caller to hear the exact name of the product spoken.

In addition, special checks were included to verify order authenticity and accuracy.

Orders are transmitted to the 370/158 under OS/VS1 and Customer Information Control System (CICS) using a special program called Rapidlink.

"Rapidlink effectively bridges the Rapidata network to our CPU. We can use our new order-processing system without changing any code," Macaluso said.

"Furthermore, we receive the benefit of faster data collection without manual transcription and preparation. Lastly, we do not have to invest substantial sums into nationwide Wats lines. The Rapidvoice service is a toll-free call for most of our sales representatives and customers," he added.

System installation was "relatively easy," Macaluso said. The major portions of the development and implementation of the first testing phase were completed in approximately a month.

The project leader, George Fear, senior programmer/analyst for the marketing group of American Hoechst, claimed "the teleprocessing of orders between the two systems was much easier than expected. The Rapidlink hardware compatibility made our internal programming very straightforward."

Once the file was in-house, only minor reformats were needed, he said. The data was subsequently concatenated to the conventional data entry output and input to the order-processing system the same day the order was taken.

"Since overall data control and integrity was of paramount importance, each day's transmission was programmatically batched and each order was assigned a unique order number," Fear said.

This data was then stored in a file and updated daily. "Any break in sequence, or duplication was detected and reported for attention," he continued.

The system, called "Max" by the people at HRPI, has improved the productivity of the order process and the morale of the sales force and customers, Macaluso said. It has also opened a way to growth because it is compatible with industry standards for order format transmission, he added.

"HRPI believes in utilizing industry innovations and developments, such as Rapidvoice, to provide better customer service which in turn helps our company grow," he said.

George Howarth, operations supervisor at Rapidata's computer center, tracks the status of services.

'Faster' Out, CICS In

OSHKOSH, Wis. – California-based Software Module Marketing (SMM) has converted 100 programs from IBM's Faster access method to a Customer Information Control System (CICS) environment for the University of Wisconsin branch here.

The transaction-processing programs were reduced in working storage size by "approximately 50%," according to Donald R. Haueter, director of computer services.

While all documentation that was still relevant was retained, "the changes made by SMM are documented very well," he added.

The university had estimated the conversion would take two and a half man-years using its own staff. SMM's effort lasted only four months.

SMM is located at the Crocker Bank Building Penthouse in Sacramento, Calif. 95814.

RAMIS REPORT #3

How to evaluate the efficiency of a DBMS

There are two factors to consider when evaluating a DBMS: human efficiency and computer efficiency.

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Emphasis on Youth Wastes Experience of Older DPer

The Human Connection

By Jack Stone
Special to Computerworld

Dear Jack:

Your reply to the "Concerned Analyst" who wrote about the "fallacies of hiring" [CW, Sept. 13] begged the issues, so I will answer his fallacies for you in the same sequence he presented them.

1. It is true that, as a matter of current hiring practice, a DPer's past record is the sole measure of his capability. The irony is that most employment departments want to see job stability in the applicant's record – four to five years with the previous company – but have no conscience about hiring and firing as large projects bloom and fade.

2. Without a doubt, job background requirements are solely based on technology experience.

3. Employment departments have advanced the notion of superspecialization to the extreme. They now demand experience with the exact equipment to be installed – witness requirements of late for three years' experience with the floppy disk.

4. Good programmers seldom make good analysts. Programmers design what *they* can program, not what the user needs.

5. Companies will not consider a person for DP if he is over 30, not 40 as "Concerned Analyst" suggested.

Regarding your suggestions for written or oral presentations at interview time to test the applicant's communications abilities, I think they are interesting, but I question their validity unless the presentations are developed to meet a specific job requirement. Unfortunately, very few companies, even the large ones, use job specifications during hiring.

A good 2,500-word essay would take two months to prepare – you would have the applicant starve before finding a new job!

The Answer Man

* * *

Dear Answer Man:

Thank you for sharpening the assessment of today's practices in hiring programmer/analysts. However, I seriously question your judgment of the time required to prepare the essay. I think the task should take, at most, a few days since the applicant should be presenting familiar material.

If one accepts your statement, one must conclude the creative communications capabilities of programmer/analysts are virtually nonexistent. I concede there are widespread difficulties with such communications and these have been the major causes of system disasters, but they are not as serious as you suggest.

Readers are invited to write to Stone, c/o Computer Education International, Inc., Suite 222, 2233 Wisconsin Ave., Washington, D.C. 20007, outlining questions, issues or situations pertinent to human relations in the DP setting.

Letters should be no more than 350 words long and include the name, title, organization and address of the sender. That information will be withheld from publication if requested.

– – –

Dear Jack:

I wonder how often job seekers over 40 have heard: "Sorry, mister, but we have other applicants whose backgrounds more closely fit our requirements."

Often the comment is made to a competent programmer/analyst whose rejection is solely based on his admitted "criminal act" of being 40 or older. Laws intended to protect against age discrimination are easy to circumvent in practice.

Why does reaching 40 virtually guarantee disqualification by employment departments? One reason is company concern about higher insurance rates and higher pension costs.

Another is the belief the individual's knowledge has become outdated and the person is too old to easily learn and accept new ideas and concepts. Yet another reason is the belief the old-timer requires more pay than the younger chaps.

How valid are these views? First, studies have shown older individuals do not, in fact, have significantly higher sickness or absenteeism rates than younger workers. Second, the successful over-40 analyst has many years of experience dealing with the application of proven systems analysis principles, methods, techniques and problem-solving skills, in addition to interpersonal relations.

Finally, with regard to pay, recent M.B.A. graduates are starting at salaries not too far removed from those of people with 15 years' experience, illustrating the great compression of salary scales.

It seems to me the 40-plus professionals offer significant skills not generally found in the rookies: a level of systems experience not available from texts or college texts; commitment to a company until retirement, having completed their job-hopping stints; and a maturity of viewpoint which supports effective DP leadership in management and training positions.

One of the Over-the-Hill Gang

* * *

Dear Brother:

There is no question, in my mind at least, that hiring practices are restrictive in almost every conceivable way and the irony is that such actions only deprive employers of access to the broadest base of talent.

However, I really don't attribute these actions to deliberate attempts by management to discriminate unfairly or illegally. I believe the hiring situation reflects the immaturity of the industry.

A similar situation has faced each of the older technical professions (and I take the stance that DP is indeed a profession), and hiring practices for them have improved through the years.

Until top management recognizes DP has to be planned, directed and controlled in a manner consistent with the test of the organization, DP industry maturity will not take place.

I hope widespread publicity given to these hiring issues will encourage a critical reanalysis of hiring practices and changes for the better.

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COMMUNICATIONS

Data Briefs

Microcosym Has Front End For HIS 6000, 60/66

PEORIA, Ariz. – Microcosym, Inc.'s MCS 30 is a front-end communications processor for Honeywell Information Systems (HIS) 6000 and Series 60 Level 66 computer systems.

Said to be compatible with HIS hardware and software interfaces, the MCS 30 reportedly provides remote access from low-speed terminals to time-sharing, transaction-processing and other direct-access programs.

The MCS 30 is based on the Motorola M6800 microprocessor. LSI technology throughout the system gives the benefits of small physical size, low power requirements and high reliability, Microcosym claimed.

The basic MCS 30 includes RS-232-compatible interfaces for eight low-speed asynchronous lines operating between 110- and 300 bit/sec. Automatic transmission rate detection is a standard system feature; built-in system diagnostic routines can be accessed remotely, according to Microcosym.

Optional features include additional eight-line modules for a maximum 32 lines. For directly connected lines, a 20 mA interface version of the line module is available, the company said.

Memory capacity can be expanded in 8K- or 16K-byte increments to a maximum capacity of 64K bytes; a read-only memory option for program storage eliminates bootloading of the system, Microcosym noted.

An eight-line MCS 30 configuration costs about $30,000. It is available on a one-year lease for $720/mo, including maintenance, the company said from 7342 W. Bluefield, Peoria, Ariz. 85345.

Religious Group Offers Guide On Linking Selectric, Intel 8080

PORTLAND, Ore. – The Center for the Study of the Future is offering a "how-to" book on interfacing the IBM Selectric typewriter to an Intel 8080 microprocessor for inexpensive networking.

The 57-page guide gives purchase pointers, explores Selectric coding and computer I/O requirements and provides an in-depth view of hardware schematics and software interfacing.

"Interfacing Selectrics to the 8080," authored by Carl Townsend, costs $12 from the center, a religious-oriented organization, at 4110 N.E. Alameda, Portland, Ore. 97212.

'Special-Interest Legislation'

Reform Act Hurts Consumers: FCC Chief

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – The Consumer Communications Reform Act of 1976 "is not consumer legislation, but rather special-interest legislation [which] restricts consumer rights rather than enhancing them."

That view was presented by Richard E. Wiley, chairman of the Federal Communications Commission (FCC), at recent hearings on the Reform Act held by the House Subcommittee on Communications.

"Consumers have benefited from new and innovative services, lower rates and a new consumer and competitive responsiveness on the part of the telephone industry itself" as a result of FCC policies, Wiley told the subcommittee.

In taking issue with the position of AT&T and the telephone industry, Wiley said the question "is whether the American consumer is better served by the unfettered access to suppliers of diverse and specialized communications services than by artificial regulatory barriers limiting his or her access to a single-source monopolist."

The FCC chief concluded that "the public interest is better served by the open marketplace [and] we believe the Reform Act would constitute a serious disservice to the American consumer. The majority of my colleagues at the FCC and I recommend against enactment of the proposed legislation."

Impact Cloudy

Thomas Houser, director of the White House Office of Telecommunications Policy, said the impact of the proposed legislation is not clear. "This subcommittee will have to address some very fundamental conflicts which have divided participants in these hearings," he said.

The Reform Act is not basically a choice between competition and monopoly, Houser indicated. "It would be very difficult for the Congress to legislate competition out of existence and it would be equally difficult to force competition to work where it is not viable," he said.

Houser called on Congress to "specify the terms, conditions and quality of competition and monopoly" and define the ground rules of "market rivalry in the future."

Donald Baker, assistant attorney general in the Antitrust Division of the Justice Department, told the subcommittee it "should take positive steps to see that present trends in the direction of more competition are strengthened."

If this is not done, Congress will strip away consumer options and eliminate the existing competitive spur which has resulted in increased carrier responsiveness, he said.

Alfred Kahn, chairman of the New York Public Service Commission, said he regards the proposed legislation "as an abomination. It is a radical bill; it runs counter to our most inveterate traditions of free enterprise.

"My concern is for the welfare of consumers in this country . . . that welfare is served by keeping open to competitive enterprise all markets that are not natural monopolies. And [communications] terminal equipment is not a natural monopoly," he said.

Edward Larkin, speaking for the National Association of Regulatory Utility Commissioners (Naruc), said "the continuation of the present FCC policies with regard to competition" would subvert the national goal of making communications services available to all people at reasonable charges.

Larkin urged the formation of a joint board of federal and state regulatory officials to study the intercity services and terminal equipment areas.

Naruc believes the joint board concept "is the most appropriate means to determine policies regarding competition," Larkin told the subcommittee.

Software-Driven NCR Terminal Debuts at NRMA

PHOENIX – NCR Corp. unveiled a microprocessor-based, software-driven successor to its NCR 280 point-of-sale (POS) terminal for retailers at the National Retail Merchants Association's (NRMA) annual conference here last week.

The programmable NCR 2151 has an 8-bit microprocessor unit with 78 mnemonic instructions and 32K of random-access memory expandable to 64K, NCR said.

The terminal can be interactively linked with the NCR 725 minicomputer processor/controller with 64K to 128K of memory which provides control for up to 350 NCR 280 and NCR 2151 terminals; it can also be tied to the NCR 751 store-level digital concentrator for multiterminal message blocking to a 725, according to a company spokesman.

Stores with 280s will be able to integrate the 2151 into their current systems without disrupting operations, he added.

A "constructor" approach to programming is said to allow a retailer to fill out standard forms describing details of the store's operations, including functions specific to the operation of each terminal.

NCR will convert the information on the forms into programs recorded on cassette tape; the cassette program is loaded directly on the 2151 or into the supervising minicomputer, the company explained.

The retailer, however, can make minor programming changes through the terminal keyboard or through the on-site minicomputer, the spokesman noted, adding the approach allows tailoring the terminal for each location within one store.

The terminal reportedly accommodates optical character recognition scanners and, in addition to recording sales information semiautomatically or manually, provides the ability to handle electronic funds transfer and receiving and marking functions.

A 27-key keyboard can be designed and programmed "in any manner" desired by the retailer to meet special requirements, NCR said.

A three-station, programmable 7 by 7 dot matrix printer operating at 45-, 69- or 120 char./sec (depending on the number of stations in operation simultaneously) can also print double characters in an 8 by 7 dot matrix format, the company said.

The screen of the 2151 is an 8-position LED numeric display with 30 programmable LED descriptors to lead an operator through complicated transactions.

Software-Driven NCR 2151

The price of a basic 2151 with 32K of programmable memory, 2K of read-only memory for program loading and 256-byte memory for hard totals is $4,145.

Initial deliveries of the software-driven terminal are scheduled for the first quarter of 1977.

NCR is headquartered at 17th and K Streets, Dayton, Ohio 45479.

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Terminal Transactions

With Floppy Disk Option

Qualterm Orients Word Processor to Communications

By John P. Hebert
Of the CW Staff

SANTA CLARA, Calif. – The recent addition of a floppy disk store-and-edit unit has transformed Qualterm Terminals' word-processing system into a flexible communications-oriented device and places it in competition with IBM word-processing systems, according to Qualterm's president, Dan O'Rourke.

The Model QFD 100 floppy disk option, shown for the first time at the recent Tele-Communications Association convention in San Diego, can be installed directly inside the company's microprocessor-based QT-145/155 terminal workstation. The result, O'Rourke said, is a true communications word-processing system (CWPS).

The major targets O'Rourke plans to aim for in the near future "are small and medium users with a combination of TWX, Telex and word-processing equipment" such as hospitals and universities as well as applications in government and industry.

"Computerized word processing helps extend services into areas of an organization which otherwise might not be able to justify communications," he said, suggesting the increasing feasibility of electronic mail as one application.

The search-and-edit CWPS, he pointed out, can be used in place of magnetic tapes or cards working in conjunction with a typewriter terminal such as the IBM Selectric.

According to the president of what is now Data Equipment Corp. (Qualterm Terminals is a division of that firm), the CWPS "fills the void for people who want communications in word processing with simplicity, and reliability being the key factor in the system's low cost.

The CWPS has a 512-character CRT screen only as an option, for example, and utilizes a Qume Corp. 45- or 55 char./sec daisy-wheel printer which O'Rourke claimed is four to five times more reliable than the IBM Selectric terminal.

A Qualterm word-processing system for a medium-sized user site would include a 55 char./sec printer, one floppy disk drive with disk storage capabilities of 300K bytes, word-processing search-and-edit function keys, a right-margin adjust feature for reformatting 300 bit/sec communications capability and an operator workstation, he said.

That system costs $8,640, or about 60% of the cost of competitive systems, O'Rourke said. Different systems with lower speed daisy-wheel printers, dual disk drives, a CRT, acoustic coupler or cassette tape units would give users greater or lesser capabilities, he added.

Qualterm's CWPS takes advantage of dial-up lines for its 1,200 bit/sec communications because higher speeds are impractical on voice grade lines without sophisticated hardware changes which, he said, drive the cost up.

Qualterm does have optional 9,600 bit/sec communications for its word-processing system, and O'Rourke noted the small, privately held company will be introducing communications at 600 bit/sec in full-duplex mode.

"Qualterm is going for the simple changes," he said, adding he doesn't want the company to do too much pioneering.

"Most terminals are oriented toward programmability, but word-processing equipment is oriented toward operator efficiency in a production environment."

Azurdata Source Data Recorder Collects, Transmits From Memory

RICHLAND, Wash. – Azurdata, Inc. has a source data recorder, the Electronic Notebook Terminal (ENT), that collects data and transmits it directly from memory.

The ENT unit collects information and stores it in its solid-state memory. It also contains electronics enabling it to transmit the collected data to a CPU at any time and over available dial-up telephones, according to an Azurdata spokesman.

The ENT terminal is self-contained and includes solid-state function and control electronics, solid-state memory, battery pack, data entry and function control keyboard, segmented LED display, a Bell Data Access Arrangement (DAA) interface and a built-in Bell 202-type modem that provides for transmission at 1,200 bit/sec in Ascii, he added.

The terminal provides for the keyed-in entry of product codes up to seven digits and quantity codes of up to five digits on the same line.

This information appears on the LED display as entered, with a field separation between product number and quantity, Azurdata said.

There is also provision on the display for various status symbols that inform the operator of the next type of input required, thus programming the inputs.

If the operator fails to make the input required by the status symbol, the keyboard is inactivated, an alarm sounds and the operator must press the "clear" key and then reenter the proper information, the spokesman explained.

The built-in battery pack provides over 10 hours of operation, supplying power for entering data, holding it in memory and transmitting the data directly from memory. The battery can be recharged using current from a regular wall socket, the firm said.

Standard memory is 2K and is optionally expandable up to 12K. Keyboard controls enable the operator to go either backward or forward through memory, with each line shown on the display for viewing.

Direct transmission from memory is made by using a small acoustic coupler placed over a telephone mouthpiece.

The ENT costs "less than $1,000" from Azurdata at 1305 Mansfield Ave., Richland, Wash. 99352.

The ENT was designed for installations and applications where large numbers of source data terminals are required, Azurdata said. Typical applications include inventory and reordering, route and delivery operations, multioffice accounting services, motel and hotel chains, fast-food chains, and auto part store chains.

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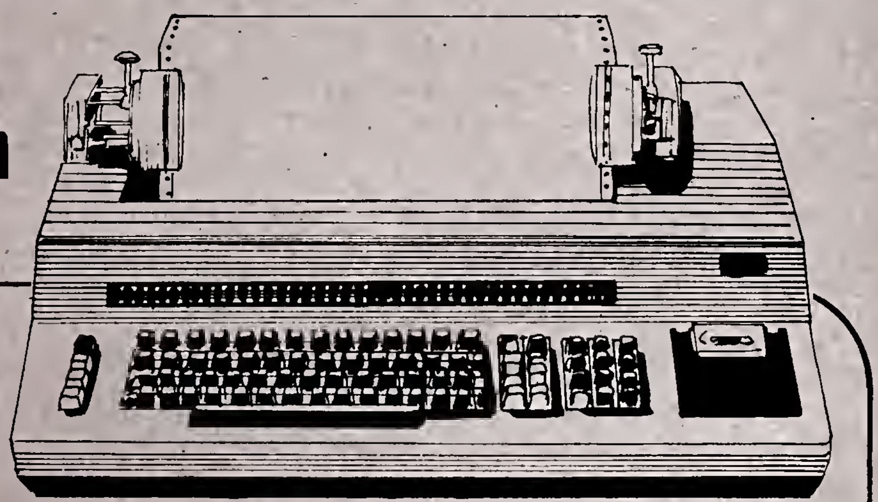

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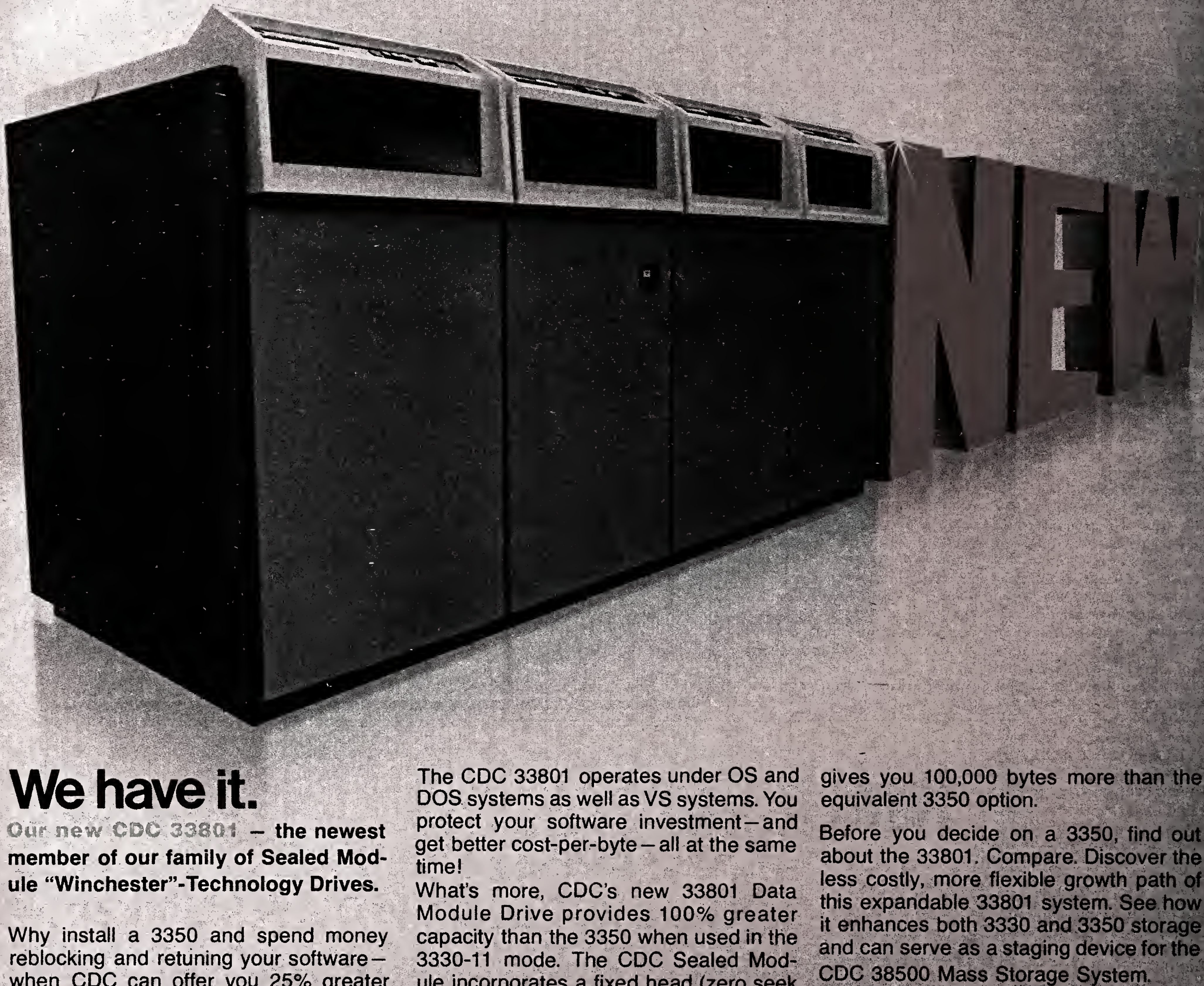

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Carrier Representatives Can Help

Planners of Overseas Nets Urged Not to Work Alone

By John P. Hebert

Of the CW Staff

SAN DIEGO – Humor, patience and good rapport with the representative of an overseas data communications carrier are the vital ingredients for establishing an efficient international communications link, speakers at a recent convention here agreed.

The advice was a prelude to a discussion of the myriad pitfalls awaiting the communications or DP manager whose firm is considering an international communications link. Speakers represented major international carriers in the U.S. and one U.S. user of international communications.

But the subject of problems and pitfalls in setting up telecommunication facilities abroad "couldn't be adequately covered if we were given six years to do so," according to Martin Finkelstein, vice-president of switched services marketing for RCA Global Communications, Inc.

"The services offered in each country and by each carrier are different. They all have overseas representation for your use and can avoid the pitfalls for you. Use them," Finkelstein advised.

The initial confusion suffered by most American communications managers when they try to carry out their assignment in an overseas country usually results "from their direct dealings with some of the government-controlled communications entities," he said, adding many problems could be avoided by first soliciting assistance from an international representative.

"International telecommunication services around the world are provided by a combination of private, semiprivate and international voice/record carriers and government postal, telephone and telegraph [PTT] administrations," he told the audience.

Planning Essential

Companies considering establishing international communications should do proper planning, which is determined by the type of service needed – from a simple 16.5 word/min telegraph channel to a 50 kbit/sec private system, Finkelstein continued.

Proper planning, he said, should involve attempts to find out whether privacy is an important consideration; what terms and conditions are demanded by the international carrier; who provides the equipment rental; and how long it takes to get equipment on the lines.

"In some countries, such as Germany, the user must arrange for a commercial vendor to provide the equipment. In other countries, such as Italy, Telex units are provided by the Ministry of PTT. A one-year contract is required by the ministry and the annual rental fee is approximately $400," he noted.

Delays Common

Another common pitfall, according to Finkelstein, is a significant delay between the time of application and the time of installation – a two-year delay in the case of Olivetti teletypewriter units in Italy, the only units permitted for teletypewriter operation in that country.

Harry Schwedock, vice-president of marketing at ITT/World Communications, suggested users "get bids from more than one of the international record carriers – and if one's implementation schedule is less than the others, he's lying.

"But it's your fault for successfully convincing yourself that installation will not take as long as the international carriers have said it would.

"All of the overseas carriers do as well as possible" to implement the communications operation of a U.S. company, he added.

Schwedock noted further the U.S. carriers have little control over implementation schedules overseas.

"Use your international carrier as a coordinator, it offers extensive services; demand performance, but realize the problems involved in setting up an international communications link," he advised.

According to Schwedock, competition between the U.S. carriers is "fairly stiff" and the user has reaped the benefits from that competitive climate.

Jack Hill, communications manager of Electronic Memories and Magnetics, said some of the problems on leased lines are often designed into the service and include cost, line speed, time differential, network type and equipment backup necessary when the international carriers' lines are inoperative.

With TWX/Telex methods, the main problems Hill has encountered have been interruption of service in the middle of a message and inability to establish connections in some countries.

The international carriers, however, "make every effort to eliminate the frustrations caused by these subjects," Hill said.

(Continued on Page 30)

Micom Designs TDM For Bell DDS Users

CHATSWORTH, Calif. – A digital time-division multiplexer (TDM) designed for channelizing AT&T Dataphone Digital Service (DDS) links has been introduced by Micom Systems, Inc.

The Model 720 digital data multiplexer makes it possible for DDS links operating at 4,800- or 9,600 bit/sec or 56 kbit/sec to be split into two or more channels, synchronous or asynchronous, according to Micom.

The multiplexed channels may be dial-up or leased, full-duplex or half-duplex; the multiplexing of half-duplex, polled multipoint circuits is also supported, the firm said.

System uptime reportedly is maximized with low-cost redundant common logic and power supplies. Monitoring and fault isolation on the DDS link are available from either end, Micom said.

Prices start at "less than $1,400 per end" from Micom at 9551 Irondale Ave., Chatsworth, Calif. 91311.

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Besides Impacting Communications

Reform Act Could Affect DP Industry, Users Warned

By John P. Hebert
Of the CW Staff

SAN DIEGO – The Consumer Communications Reform Act of 1976 not only will have a formidable impact on data communications users if it becomes law – it will also directly impinge on the computer industry, according to a regulatory attorney.

Herbert Marks, counsel for the Independent Data Communications Manufacturers Association (IDCMA), recently told a Tele-Communications Association conference plenary session on the Reform Act here what he believes is at stake with the AT&T-supported legislation, which has become known as the Bell Bill.

What is happening, Marks said, "is a call for a moratorium on further implementation of competitive policies" in the communications industry.

"If the legislation is enacted, you will lose the ability to demand the best terminal equipment for your network; you will lose the ability to get a carrier responsive to your needs; and you will lose the ability to establish economically feasible telecommunications systems – especially across state lines," Marks told an audience of communications users.

Ramifications for DP

On the computer equipment side, "the bill to hamper competition in all respects has important ramifications in its vast effects on systems design," the IDCMA counsel said.

The legislation, initially introduced into Congress as H.R. 12323 by Rep. Teno Roncalio of Wyoming, would encourage the development of different standards for interconnection and interconnection policy if enacted, Marks stated.

Enactment of the proposed legislation would give state commissions control over station equipment and terminating facilities and foster fragmentation of an integrated national telephone network, he added.

Bell will publish page after page of specifications for interconnected equipment, which will be "no bed of roses" for vendors, he said.

"Each of the 50 states will be given jurisdiction over terminal equipment. Then the question of how to define 'terminal equipment' will add to the confusion," Marks predicted, explaining the ramifications of communicating across state lines and the implications of having to design each network node differently.

On the communications side, "let's not assume enactment of the bill will exempt existing carriers . . . We have to decide if we want to live in a world without any of those alternatives," he said.

The "basic issues" have been missing in arguments countering the legislative proposal, Marks said, noting sponsors now number 175 in the House and 17 in the Senate.

"Computer and communications systems are now becoming – and will continue to become – increasingly vital to business and government. What does that mean?" he asked.

In answer, Marks said the costs of goods and services will be impacted if there is a fragmentation of service on the state level; there will be a resulting loss of jobs and many kinds of devices will not be available, he added.

He further told attendees the National Association of Regulatory Utility Commissioners (Naruc) has reported that non-Bell computer equipment has had no severe effect on the Bell network and that it has been documented on the public record that Bell developed advances in modem equipment only in response to competition from independent firms.

Marks then told the users they had a "very special responsibility.

"You know what competition has meant for your systems and, rather than have the legislators hear lawyers' and economists' views, I think the people with the facts ought to make a specific appeal."

Net Planners Urged Not to Work Alone

(Continued from Page 29)

Another problem encountered, he said, has been the receipt of invoices from "bogus directory publishers.

"I'm sure many of you have received, at various times throughout the year, invoices for directory services in varying amounts for directories that had not been ordered. Do not approve these invoices," he advised.

All solicitations for unauthorized TWX/Telex directory listings should be referred to the Consumer Protection Agency in Washington, D.C., for investigation and possible prosecution, he said.

In spite of the pitfalls, Hill said, the international carriers are continually upgrading their service and equipment. Because of the intense competition between the U.S. carriers, there should be better service in the future – possibly at faster speeds and lower costs, he predicted.

Larry Cohen of Western Union International (WUI) noted data communications in the spectrum above and including 2,400 bit/sec speeds has grown substantially over the last decade, particularly in Europe.

Ten years ago, Cohen said, the standard was communications at 1,200 bit/sec. Today the transmission speed overseas includes 2,400-, 4,800- and 9,600 bit/sec speeds on voice grade lines and 50- to 64 kbit/sec on special satellite channels.

The user should, however, be aware of propagation delays that can last up to .5 sec or more per block of data transmitted, resulting in only 37.7% efficiency.

For example, a 2,400 bit/sec line has a final efficiency of only 905 bit/sec, while a 9,600 bit/sec line will have an effective speed of only 1,300 bit/sec, according to Cohen, who noted these figures don't take transmission errors into account.

The additional line costs between the lower and higher speeds may not be worth the proportionately low increase in final output due to propagation delays.

COM perspectives from Kodak:

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Kodak people – working together to make COM work for you.

Kodak

Point-to-Point Net Users Urged To Plan for Potential Problems

By John P. Hebert

Of the CW Staff

SAN DIEGO – Users should not think they can solve an on-line system failure without being prepared. They should think and plan in advance of actual problems occurring because they will always happen at the worst possible time.

According to speakers at a recent Tele-Communications Association Conference session here, this is the best way to isolate on-line systems problems in point-to-point communications networks.

Speaking solely in reference to the segment of a communications link between modems, Don Combs, head of computer communications support at Safeway Stores, had a long list of suggestions to spare users the danger of alienating a vendor of common carrier services.

"Don't call Ma Bell and say you have a circuit problem when you haven't checked the modems. The great majority of on-line systems problems are simple things," Combs said.

A number of things can be done to facilitate problem isolation; users should keep track of what they do at the time of system test – and who they do it with, he advised.

Users should have one end of the network in charge of relations with the carrier when a problem occurs; try to isolate the fault by elimination or replacement of equipment because it's the easy way; and determine what test equipment is needed before the problem occurs, Combs said.

Sophisticated equipment isn't always necessary to do the job, he added.

In the area of vendor relationships, Combs suggested users should establish a good relationship before it's needed as a vehicle to solve a problem.

Users should not tell the vendor how to do his job but should inform the vendor of the specific outcome of the problem if it is solved without the vendor's help and praise or condemn the vendor when it is justly deserved.

Infotron TDM Works On DDS Facilities

PENNSAUKEN, N.J. – Infotron Systems Corp. has introduced the Timeline 290 Miniplexer, a synchronous time division multiplexer (TDM) for use on both Bell's Digital Data Service (DDS) and conventional facilities.

Applications are said to include remote job entry, IBM 3270 to other synchronous CRTs and CPU-to-CPU transmissions.

Users of Bell 209 modems reportedly can switch to DDS and employ all-digital transmission and Miniplexer multiplexing without losing the bandsplitting benefits of the 209.

The Miniplexer can also be used for bandsplitting on conventional facilities, Infotron claimed.

The Timeline 290 will split a 2,400-, 4,800- or 9,600 bit/sec DDS or conventional facility into two, three or four separate channels. Input can be a mix of DDS and conventional at speeds of 600-, 1,200-, 2,400-, 4,800- and 7,200 bit/sec.

The Miniplexer is priced at $1,500 per end, complete with four channels, Infotron said from 7300 N. Crescent Blvd., Pennsauken, N.J. 08110.

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The Course Work

Using case studies, interactive discussions and workshops, this two-day seminar examines the human relations conflicts that commonly affect most computer centers, and presents strategies and techniques for resolving them.

The seminar is intended to give each attendee a new and practical understanding of the aspirations and motivations of computer professionals. It is designed to help DP managers communicate more effectively with senior management, and develop more positive relationships with end users and other people outside the data center. This includes the development of a "public relations" program for DP center, with the object of increasing end users' understanding of how the computer center can help them in their jobs.

Here are just some of the things you will learn:

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- How analysts and programmers have a different view of their jobs than management, does and how to handle the resulting conflicts.
- How to replace "management by crisis" with "management by plan."
- How to increase the people-productivity of your DP center and thereby make it more useful to your entire organization.
- The pros and cons of structured design and programming management techniques.

Jack Stone, PhD, is the Seminar Leader

Jack Stone, PhD, is managing director of Computer Education International, Inc., and is recognized for his abilities as an author, educator, and consultant to EDP managers. A Phi Beta Kappa graduate from Princeton University, Dr. Stone has been involved with computers and electronic systems for over 23 years, including 8 years as a Manager at IBM, where his responsibilities included development of Instructional Systems, as well as management of a DP center; and 7 years as a principal in several independent firms supplying management consulting and training services to large computer centers. He is a member of ACM, DPMA, AMA, and the American Society for Training and Development. Dr. Stone has contributed many articles and columns to *Computerworld* on the subject of EDP human relations, and presented a paper at NCC '76 on "ADP Training Systems." He is currently preparing his first book for publication, which deals with human relations in medium-to-large computer centers, and these works will form the basis for the extensive materials you'll receive in the course.

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The charge for the entire 2-day seminar including continental breakfasts, luncheons and all course materials is $295*per registrant. Additional registrants from the same company get a $35 discount, and pay only $260*. This does not include hotel rooms, if necessary, but we have reserved a block of rooms at the seminar hotel for attendees who wish them. To enroll, look over the schedule below, fill in the coupon and send it in. Remember, enrollment is limited and no space can be firmly held until we have received check or purchase order.

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Bits & Pieces

AUUA Fall Conference Commences Today

WINSTON SALEM, N.C. – The Americas Univac Users Association's (AUUA) Fall 1976 Conference at the Hyatt Regency Hotel in Washington, D.C., begins today.

Over 80 formal sessions have been scheduled concerning hardware, software, applications and general interest. The conference is open to all users of Sperry Univac products.

The meeting will be the second since AUUA's formation in October 1975 from a merger of the former Univac Users Association and the Computer Users Association.

Additional information on the conference can be obtained by contacting Charles W. Esserwein, at Gay & Taylor, Inc., P.O. Box 1410, Winston Salem, N.C. 27102.

Memorex Determines 3650 Prices

SANTA CLARA, Calif. – Memorex Corp. has determined prices for its 3650 disk storage subsystem, according to a spokesman.

The plug-to-plug, IBM 3350-compatible device [CW, Sept. 9] costs $1,000/mo for the direct access storage model, $1,260/mo for the 3653 disk storage module and controller, $1,305/mo for the 3654 module and alternate controller and $2,300/mo, including maintenance, for the 3674 control unit on a 24-month extended-term lease plan.

Ninety-day and one-year plans are also available, Memorex noted from San Thomas at Central Expressway, Santa Clara, Calif. 95052.

Symposium to Feature COM Topics

COLLEGE PARK, Md. – A symposium to be held here on Nov. 22-23 will discuss several topics of computer output microfilm (COM) including "COM Feasibility Studies," "COM Software Issues," "Evaluation and Maintenance of COM/Computer Input Microfilm (CIM)" and "Managing a COM Facility."

Jointly sponsored by the ADP Management Training Center of the U.S. Civil Service Commission and the Federal Government Micrographics Council, the symposium is open to all government employees and U.S. military personnel.

The joint symposium and exhibition costs $65 per participant; the exhibition alone costs $15.

Information is available from U.S. Civil Service Commission, ADP Management Training Center, TOA-GMS, Washington, D.C. 20415.

By Increasing Annual Productivity

Tape Handler Saves SSA $1 Million

Special to Computerworld

BALTIMORE, Md. – The Social Security Administration (SSA) is saving about $1 million/year in increased productivity through the installation of a tape mounting and control system on its IBM mainframes, according to an SSA spokesman.

The SSA maintains approximately 325,000 reels of magnetic tape in its tape library vault, with 20,000 of these reels required for either input or output in daily computer runs, he said.

On the average, a tape mount or dismount takes from one to two minutes. During that period, the tape drive remains idle and, in turn, the system cannot process the job.

Because idle computer time cannot be regained, processing becomes very costly. In addition, the potential for tape handling mistakes exists, which accounts for the possibility of reruns and missed deadlines, the spokesman noted.

Realizing that reduction of tape and handling mistakes could save it money, the SSA began to evaluate and eventually installed a tape mounting display and control system from Scientific Measurement Systems, Inc. (SMS).

Prior to the installation of the tape control system, an operator at a console would call out the number of the tape to be mounted and the identity of the tape drive through a public address system.

Hopefully, the tape mounting personnel would remember correctly and get the right tape to the right drive, Mike Abramowitz, DP technical advisor, said.

In other cases, personnel would refer to an IBM 2740 console in the middle of an aisle which would pick up the message from the operating system and display the number of the tape and the file device. The tape handler would still have to leave the console and remember the numbers, he added.

Messages Displayed

Now, the display units, installed on top of individual tape drives, display messages about the specific drive that must be acted upon. Tape handling messages are also displayed at a master console printer or CRT, he noted.

Colored flashing indicators attract the operator's attention and are large enough for the handlers to see from the tape library, Abramowitz said. A flashing yellow light signifies a mount is required and a red light indicates dismount, he added. An eight character alphanumeric display alternately flashes job name and volume serial number, he added.

Prior to the installation, the SSA reasoned that because tape drive displays bring the request for personnel action to the tape drive and not just to an isolated peripheral device, such as a CRT or console printer, a reduction in the time required to mount and dismount tapes and a substantial reduction of mismounts would result, according to Abramowitz.

The primary question of the SSA personnel evaluating the display system was: Would the savings be sufficient to justify an acquisition of tape drive displays?

The results of a pilot study provided the answer: CPU utilization increased over 10%; total job runs increased nearly 8%; Abends were reduced 11%; and high-speed tape drive utilization per job decreased approximately 3%, making drives available for other jobs waiting in the queue. (See accompanying box.)

The evaluation indicated significant improvement; interviews with operations management and operators indicated operations management acceptance was very high.

The tape display system provided operations staff with a tool for monitoring performance from a central point and determining whether work was continually being processed, Abramowitz said.

The operations staff no longer had six-digit label numbers; job name and job number were also made available.

After the pilot study, the SSA contacted a number of other users of tape display systems to find out if they had experienced the same kinds of savings. When this was confirmed, it issued a request for proposal, according to Abramowitz.

Bids were solicited from seven vendors and advertised in the *Commerce Vendors Daily*. However, only SMS responded, an SSA spokesman said.

The units are presently installed on 15 of the systems with four more to be equipped soon, Abramowitz said.

SSA Pilots Study

BALTIMORE – The Social Security Administration (SSA) conducted a pilot study on tape handling optimization in a controlled environment on its System Number 15, an IBM 370/165 with 63 tape drives.

For a period of 45 days (three daily shifts, Monday through Friday) between July 16 and Aug. 31, the tape drive display system was tested in a regular work environment (a basically repetitive 45-day cycle) and the system's efficiency was compared to an equal period of time prior to the test, a spokesman said.

The results indicated the total CPU time increased to 3,975 minutes more than the June 1 to July 15 period. This averaged 120.45 min/day more after the system was installed.

An increase in total jobs run after the installation of the tape displays was also noticed. From the period June 1 to July 15, 6,972 jobs were run in comparison with 7,609 jobs accomplished in the later period, averaging 19.3 jobs more per day, the SSA spokesman said.

Extrapolating the savings to the two 370/165s, two 370/168s and 13 370/65s then at the SSA, the agency found the potential net savings would be close to $1 million/year, it said.

Consulting Service Aids Firms In Selecting Data Entry Gear

NEW YORK – Advanced Keyboarding Systems is offering a consulting services package to help companies select and convert data entry hardware, according to a spokesman.

Included in the service package is a review of the firm's DP requirements to determine the best equipment for the iob.

A trade-off analysis is conducted to measure the cost-effectiveness of the proposed plan against present operations, in terms of money, time and people, the spokesman stated.

Detailed functional specifications for the proposed system are developed in terms of the equipment characteristics. Detailed equipment specifications in a format suitable for use as a request for proposal are included, he added.

The service includes organization and monitoring of a bidders' conference and after this specific hardware recommendations are given.

Finally, the firm will help handle negotiations and aid in the installation.

Typically, a 20-person data entry department analysis with 80 different jobs would cost $5,500, exclusive of negotiation costs, according to the spokesman.

Advanced Keyboarding Systems is at 437 Madison Ave., New York, N.Y. 10022.

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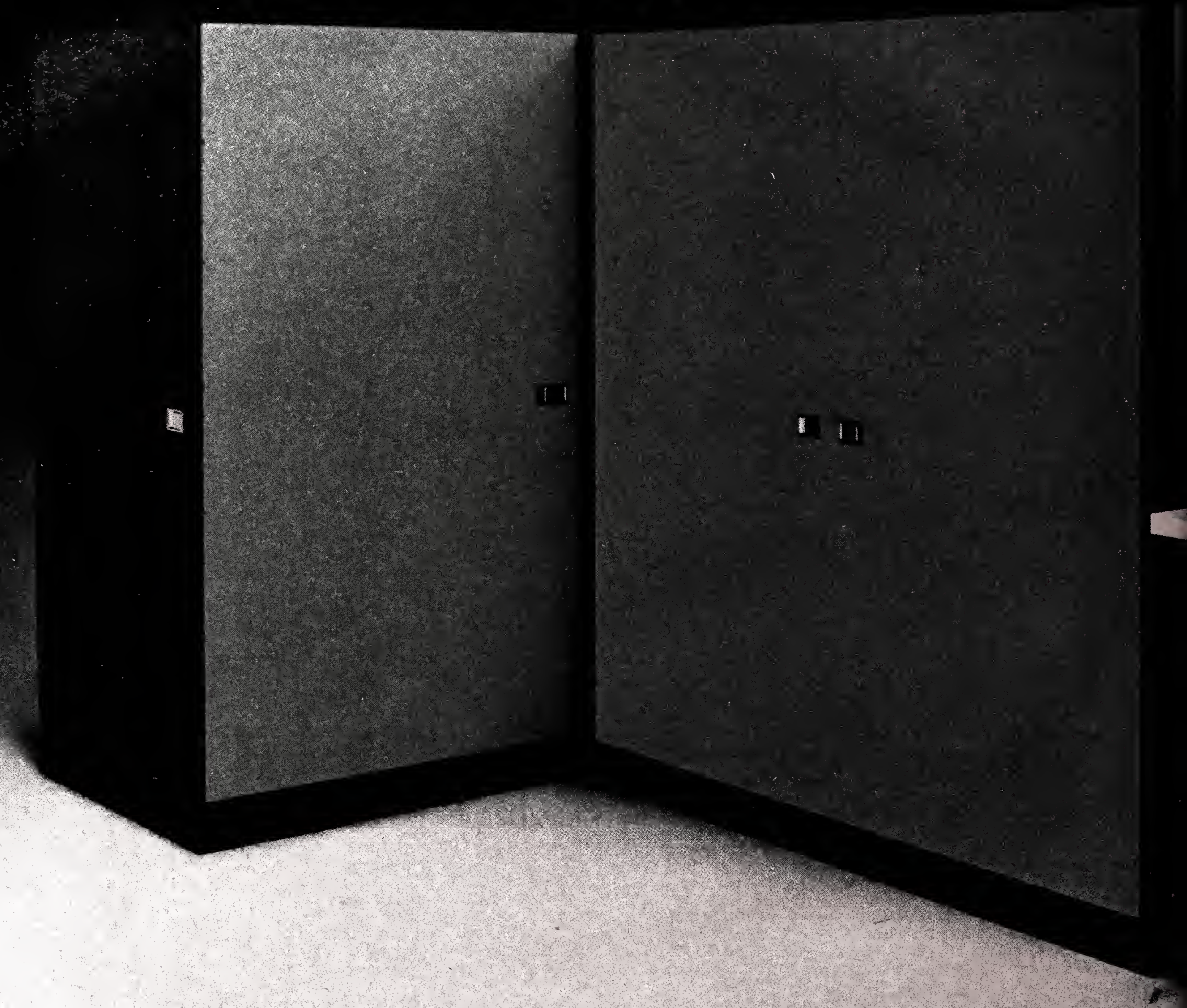

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Beermaker Picks DP Site With Priority Checklist

NEWARK, N.J. – How does a large company decide to choose a particular site for a computer center?

The F.&M. Schaefer Brewing Co. considered a checklist of 62 criteria and conducted physical reviews and analyses of 37 different sites in New York City, Westchester County, N.Y., and New Jersey before settling on a building here.

The internal study was undertaken under the direction of Joseph Franzam, director of management information systems, and Howard Halperin, DP manager.

Schaefer had decided to relocate its entire DP facility from Brooklyn, N.Y. The eight most important criteria the firm considered were:

- The firm's computers had to be located within a 25-mile radius of its prime users.
- The center had to be well protected from intrusion and possible sabotage.
- A similar configuration at another data center where time could be made available had to be close by.
- The primary source of power had to be reliable. Sudden shifts in power, whether surges or dips, could cause the facility to shut down; the possibility of this type of occurrence had to be minimal.
- The data center had to be situated below the seventh floor of a building because that is the maximum range of most effective fire-fighting equipment.
- Users had to be able to easily communicate with the data center and have easy access to data center services to and from remote locations.
- Space for expansion had to be available.
- The company had to be able to attract as well as retain a quality staff for its data center.

According to the firm's findings, New Jersey proved to have an edge over the other areas in three categories – the availability of a backup data site with adequate time, the availability of a quality staff and the availability of a reliable source to power.

All of the other criteria, with the exception of the sixth floor limitation which eliminated many Manhattan sites, proved relatively equal in all three geographic regions.

In reviewing and grading each of the 37 sites, the Schaefer study determined the final site attained the highest overall rating and satisfied each of the eight major criteria.

The site selected was International Plaza on Route I-9 opposite the Newark airport.

CDC Disk Packs Handle Calcomp, Univac Drives

MINNEAPOLIS – Control Data Corp. has introduced two series of removable magnetic disk packs for use with California Computer Products, Inc. (Calcomp) Trident drives and Univac 8416/8418 disk drives.

The CDC 875 series packs provide 54.7M or 82.1M bytes of data storage for users of Calcomp T-50 or T-80 drives respectively.

Each pack contains three recording disks with five data surfaces; the sixth surface holds prerecorded servo positioning and index/timing information, CDC stated. Packs also include upper and lower protective disks.

Data is recorded at 4,040 bit/in. on the Model 875-70 and at 6,060 bit/in. on the CDC 875-80. Recording surfaces of both packs contain 815 tracks at a density of 370 track/in.

The CDC 884-60 and 884-80 were designed for use with Univac 8416 and 8418 disk storage drives respectively.

The CDC 884-60 stores up to 28.9M bytes of data.

Purchase prices for the Trident-compatible CDC 875 series packs are $427 (for the 875-70) and $433 (for the 875-80).

CDC 884-60 and 884-80 Univac-compatible packs cost $358 and $484 respectively, the company said from Minneapolis, Minn. 55440.

Decision Data Adds Printer, Reader/Punch

HORSHAM, Pa. – Decision Data Computer Corp. has printer and card reader/punch models for IBM 360/370 systems, the firm said.

Users can select speeds of 300-, 450-, 600-, 900- and 1,500 line/min for the printers, the company noted.

The 80-column card reader/punch reads at 200 card/min and punches 45- to 75 card/min, depending on the number of columns punched, the firm said.

The 96-column unit reads at 300 card/min and punches 60- to 120 card/min.

All units are connected to the multiplexer channel through their controllers and are compatible with the 370 and 360 operating systems, he noted.

The printers and controllers range in price from $16,250 to $45,750; the card reader/punch costs $14,950. Decision Data is at 100 Witmer Road, Horsham, Pa. 19044.

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Dairy Using System to Assure Fresh Milk Delivery

FLEMINGTON, N.J. – Johanna Farms here is using a computer to reduce milk inventories and help assure fresh milk deliveries to its customers, while at the same time enabling fuel savings with better planned truck deliveries.

Incoming orders – from supermarkets, convenience stores, hospitals and schools in New Jersey, eastern Pennsylvania and northern Delaware – are now entered on terminals linked to an IBM 370/125.

"We are producing to order," Frank Hunter, DP manager, said.

"This means we buy just enough milk from farmers' cooperatives and process only the quantities we need to fill orders.

"That in turn keeps inventory on this perishable product low and in-house a very short time, getting fresher products to our customers," he added.

"Accurate and timely totals of products ordered by each customer have meant elimination of most two-load deliveries to the same customer," Hunter said. "Formerly, production was based primarily on our drivers' estimates which were subject to error, especially as our business grew."

"Special deliveries also have been reduced, amounting to a significant yearly savings," he said.

Most orders are taken by telephone. As orders are received, the customer number and item and quantity information are entered into IBM 3270 video display terminals linked to the 370/125 at the plant.

The system edits the information and displays on the terminal's screen the unit count, total case count and totals of the order, which the order taker confirms with the customer.

The information is also entered into the computerized production scheduling system which is run twice a day. This tells the plant how much milk must be produced for the next few hours according to package size and label name.

A load report and customer delivery tickets are computer-printed.

"With the present system, we can determine ahead of time whether an order for a particular group of customers is so large one truck can't handle it," Hunter said.

"So we have an overflow truck waiting. Before, we didn't know of an overflow situation until after a truck was loaded. Then loaders became aggravated because they would have to remove heavy milk cases off the truck.

Service Firm Finds CPU Alarm Reduces Worried Clients' Calls

By Esther Surden
Of the CW Staff

CLEVELAND – An alarm on the CPUs at Champion Service Corp. here is helping that firm prevent downtime for its customers who rely on the more than 600 terminals connected to its mainframes, according to John R. Hall, president.

The company provides savings and loan institutions and banks with on-line, real-time communications to customer files. The financial institutions it serves are located within a 35-mile radius of Cleveland.

"A thousand or more people can access the system at any one time," Hall noted, "and we wanted to know as soon as possible when the system was down.

"We felt it made sense to get an alarm device. When the computers would go down, it would take our customers five minutes to recognize their terminals weren't working, to realize it wasn't mistaken data entry and to call.

"Five minutes later the phones here would start ringing until we could get the systems up and running again."

With the alarm system, the company knows before its users do that a failure has occurred and can begin to rectify the situation before the barrage of phone calls, Hall noted.

Often the phone doesn't even have a chance to begin to ring, he added.

The company has a mix of IBM 360/30 and Digital Equipment Corp. PDP-11/40 CPUs. Momentary outages can happen "sometimes four times a day and sometimes once in two weeks," depending on error conditions, Hall said.

The alarm, a Sentry/360 from CRU, a Cleveland manufacturer of computer performance measurement systems, checks bits in certain areas of memory.

"Every X number of milliseconds we put a bit on in certain core locations; the alarm tests that bit in that position of core," Hall explained.

If the bit isn't there, an error condition is reported and the alarm sounds.

Because the CPUs are essentially standalone devices, the alarm system has been very helpful, Hall added. The shop could essentially go on working without even knowing that the units were down or in an error-producing situation, he noted.

The systems at Champion work 13 hours a day from about 8 a.m. to 9 p.m.; about 40 people are employed by the organization.

OCR Reader Features Adjustable Optics

ROCKVILLE, Md. – The OEM RIT 2000 Mini optical character recognition (OCR) reader is now available from Input Business Machines, Inc.

The RIT 2000 comes as a single hand-fed transport with adjustable optics for line read selection. An automatic feeder and automatic edger are available as options, the vendor said.

Minimum configuration transport with single numeric font and RS-232 output interface is about $6,900 in quantities of 10 or more from 156 Halpine Road, Rockville, Md. 20852.

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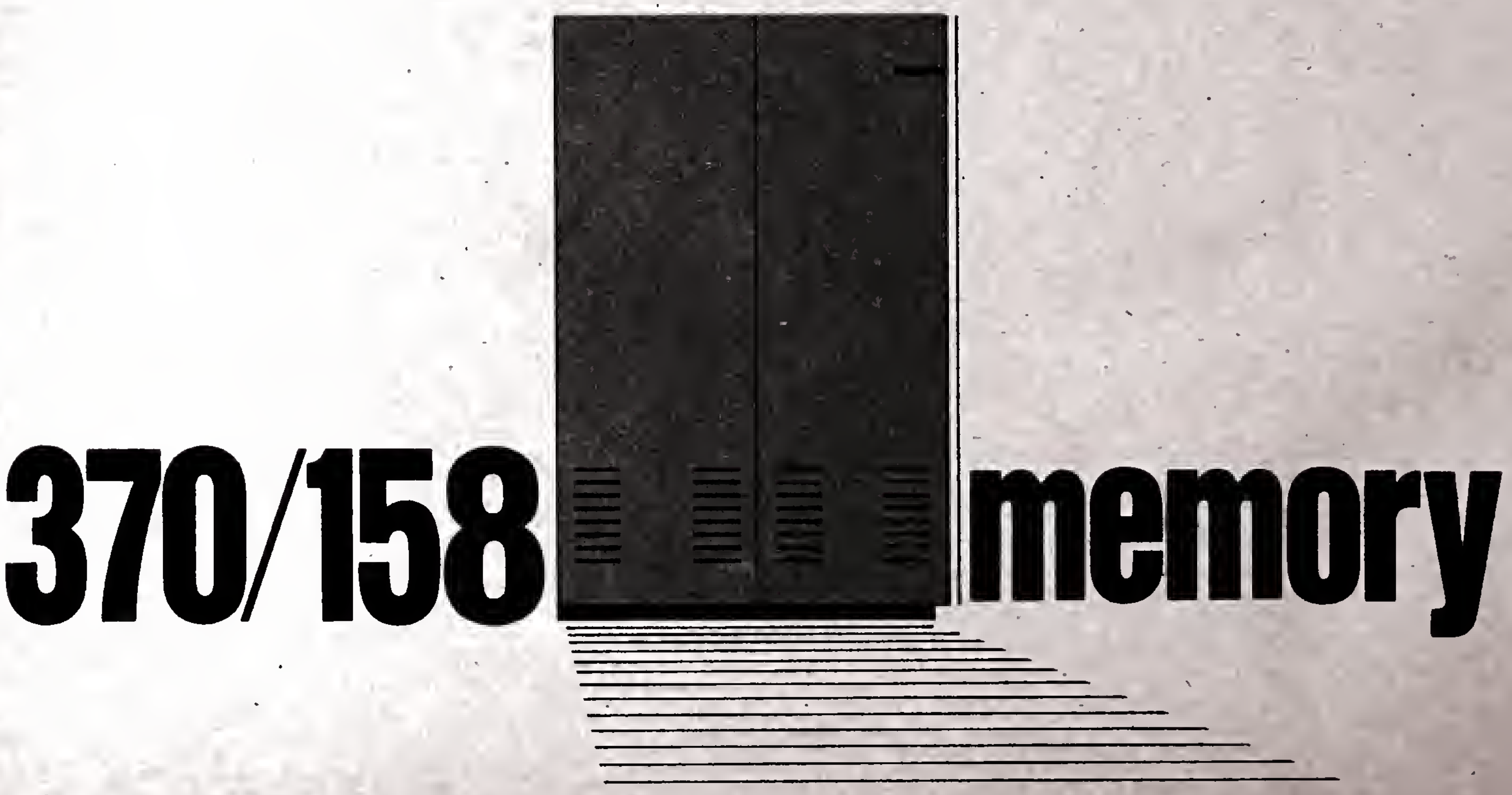


COMPUTER MANAGEMENT
United Kingdom

World rank as DP market: *Fourth*
1975 DP expenditures (1): *$2.7 Billion*
1975 imports from US (2): *$270 Million*
Rank as importer from US: *Third*

Computer Management is a monthly magazine recently purchased by Computerworld, Inc. Monthly circulation is 30,000.

COMPUTERWOCHE
Germany

World rank as DP market: *Third*
1975 DP expenditures: *$3.7 Billion*
1975 imports from US: *$274 Million*
Rank as importer from US: *Second*

Computerwoche is a weekly tabloid newspaper started by Computerworld, Inc. It has a circulation of 21,000 to the West German computer community.

SHUKAN COMPUTER
Japan

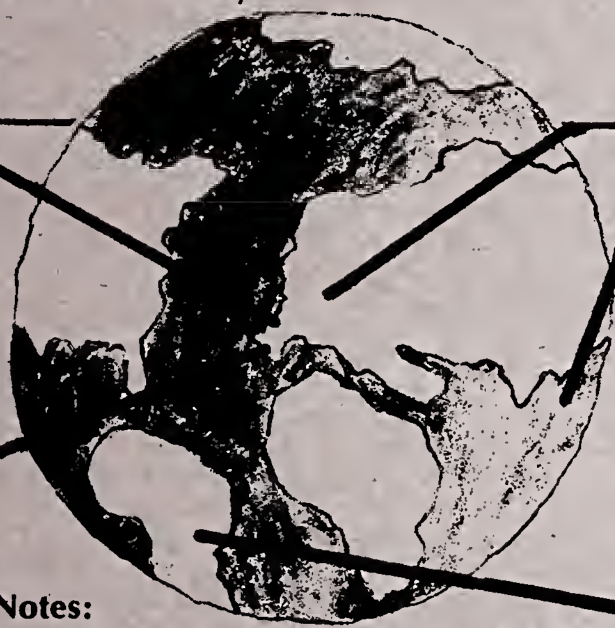
World rank as DP market: *Second*
1975 DP expenditures: *$4.6 Billion*
1975 imports from US: *$189 Million*
Rank as importer from US: *Fifth*

Shukan is a weekly tabloid newspaper, jointly owned by Computerworld and Dempa publications. Circulation is 35,000.

Zero-Un Informatique
France

World rank as DP market: *Fifth*
1975 DP expenditures: *$2.5 Billion*
1975 imports from US: *$223 Million*
Rank as importer from US: *Fourth*

Computerworld represents **Zero-Un Informatique** in the U S. Zero-Un has three publications, one a weekly tabloid newspaper with circulation of 22,000, the second a monthly magazine, circulating 13,000 copies, and a new bi-weekly, Minis and Micros. All circulate throughout Europe's French speaking computer market.



DATANEWS
Brazil

World rank as DP market: *12th*
1975 DP expenditures: *$250 Million*
1975 imports from US: *$60 Million*
Rank as importer from US: *(Est) 10th*

DataNews is a bi-weekly tabloid newspaper in Portuguese with an English-language summary. It is owned by Computerworld, Inc. and has a circulation of 7,000.

Notes:

(1) These figures are estimates of International Data Corporation, the world's largest EDP Market research firm.

(2) Import figures come from the US Department of Commerce, and include only computers and computer-related products manufactured in the United States by US firms. Many US firms also manufacture abroad, and those products are not counted.

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Mini Bits

IMS Planning Workshop On Health Care Applications

CAMBRIDGE, Mass. – International Management Services, Inc. (IMS) is sponsoring a management seminar/workshop here on Nov. 8-10 for all medical, administrative, technical and DP professionals who expect to participate in minicomputer decisions or who will be affected by their use.

The seminar will provide a survey of products and applications available now and expected in the future. A basis for comparison will be given for evaluation of various products and techniques, IMS said.

Recommended management steps and firm guidelines based on experience will be included for analysis, design, selection and installation, IMS added.

Additional information can be obtained from IMS at 70 Boston Post Road, Wayland, Mass. 01778.

Ampex Extends Memory Line

MARINA DEL REY, Calif. – Ampex Corp. has extended its line of microcomputer core memories for microprocessor applications with the introduction of a single card module storing 1K eight-bit words and allowing data access within 450 nsec, the firm said.

The MCM-8300 is designed to operate in read-modify-write applications. Also available are 512- and 256-word versions, a spokesman noted.

Each memory module includes timing and control, data and address registers, decoding and drive circuits and a TTL-compatible interface, he said.

A data save feature is incorporated in the MCM-8300 to prevent loss of data under all conditions of power turn on/off or temporary power failure, he noted.

The MCM-8300 costs $180 in large OEM quantities, Ampex said from P.O. Box 33, Marina Del Rey, Calif. 90291.

Long-Line Adapter Supports RT11

TROY, Mich. – A long-line adapter from Systems Associates, Inc. is said to provide software and hardware support for high-speed communications under Digital Equipment Corp. RT11 operating system.

The LLA 400 hardware sends data up to 1.5 miles at 227,000 char./sec using a single cable, according to the firm.

Software support and direct memory access hardware operation allow networks of systems using Fortran and Assembly language programs to communicate with low overhead, the company said.

Two LLA 400s cost $9,000 for a basic system. Prices can range up to $60,000, the firm said from 55 Park St., Troy, Mich. 48084.

Xebec Has Controller

SANTA CLARA, Calif. – The 1000 series controller from Xebec Systems, Inc. is a microprocessor-based unit that allows the firm's memory peripherals to be connected to Digital Equipment Corp., Data General Corp. or Hewlett-Packard minicomputers, the firm said.

The unit was designed around Advanced Micro Devices' 2900 microcomputer.

The controller can be used with systems incorporating from 5M go 1200M bytes of disk, 12.5 to 125 in./sec magnetic tape and Persci double-density floppy disks.

A 300M-byte storage module incorporating the controller costs $25,000, Xebec said from 2985 Kifer Road, Santa Clara, Calif. 95051.

For Comprehensive System

Hospital Finds Mini/FM Mix Economical

By Edith Holmes
Of the CW Staff

WASHINGTON, D.C. – The combination of minicomputers and facilities management (FM) seems to be an economical alternative to a mainframe for the Georgetown University Hospital (GUH) here in its quest to implement a comprehensive health care and administrative system, according to the user.

The hospital is spending 26 months and a total of $250,000 for two Data General Corp. (DG) Eclipse C300s to implement an admitting-lab-pharmacy (ALP) system which is already partially up, according to Bruce Jones, assistant administrator for hospital services.

The cost of going with an IBM mainframe would have been two to three times greater, he noted.

Similarly, because of its "dire need" four years ago for DP expertise in a market in which such specialized knowledge was hard to come by, GUH elected to bring an FM firm, Compucare, on board to help it make the transition to automation without hiring its own DP staff, Jones said.

The overhead the 535-bed hospital would have incurred with an in-house DP organization is offset by the level of expertise obtainable from an outside contractor, he stated.

GUH is nearing the end of its 26-month ALP project. Since the planning for ALP began in August 1974, the university hospital has all patient admitting up and running.

Patient admitting includes a medical record index comprised of all the people who have come to the hospital as in- or outpatients in the last 30 years, Jones explained.

Patient admitting also consists of emergency and outpatient admitting and a disease and operative index, an important tool in a teaching hospital like GUH, Jones added.

Both the laboratory and the pharmacy aspects of ALP are still being implemented. The lab system is based on an older system supplied by Meditech.

Hematology is already on the system; each technician has a CRT that is interfaced, on-line to the coulter, the principle instrument in the hematology lab, Johnson said.

In January the pharmacy system should be up, he said. Among the pharmacy applications that will go on-line then are a unit dosage system; the scheduling of drug dispensing; profiles of patients' drug histories; billing of patients; schedules for loading drug containers; administrative schedules; and a drug product information file, an on-line desk reference similar to the *Physician's Desk Reference*, with information geared to the pharmacist, Jones explained.

Eventually, all 28 nursing stations in the hospital will be equipped with their own terminals which nurses can use to access lab and pharmacy data on their patients, Jones said.

The hospital is currently training its first nursing station for this operation, he noted.

Configuration Upgrade

In the next six months, the hospital will upgrade its configuration to include three terminals for every nursing station, Johnson noted. That will mean some 130 terminals – Data Media 2500 CRTs and Digital Equipment Corp. LA-36 Decwriters. will be on-line to one Eclipse C300; a considerable jump from the 50 CRTs and printers now on the 356K-byte machine, he added.

Currently, 2M-byte disk drives interface to the C300 which operates under the Meditech Interactive Information System (Miis), according to Jones and Johnson.

Miis is a derivative of the Mumps operating system.

GUH relies on its other 256K-byte C300 for backup. The system has a 1M-byte disk drive attached to it. The CRTs operate at 9,600 bit/sec; the printers at 300 bit/sec, Johnson noted.

The nursing stations will need three separate terminals to perform three distinct functions, he said. Nurses will use a CRT to ask about a patient's status. One printer will turn out requisition labels for tests and specimen numbers for the laboratory.

Another printer will provide hard-copy printouts of the results of "stat" tests – those tests physicians order to be done right away, he added.

GUH's theory behind implementing ALP has been to add modules and applications to its system at its own pace and to buy computing space at a service bureau until it became economically feasible for the hospital to acquire its own equipment, Jones stated. With the end of getting ALP up and running in sight, the hospital's second big bite into facilities management – the reorganization of its patient billing system – has begun, he said.

By September 1977, GUH expects to complete conversion of its billing system from the 6 hour/day run time in batch mode on Georgetown University's IBM 370/145 to an in-house operation on a minicomputer, Jones noted.

The hospital will acquire "a C300-type CPU" for its billing system and anticipates making a hardware savings of $140,000/year by not renting batch time on the university's 370/145, he said.

(Continued on Page 41)

'Tough Teething' Over for Firm Hoping to Save $20,000/Year

By Esther Surden
Of the CW Staff

ELMSFORD, N.Y. – It's been a "tough teething process," but Stal-Leval, Inc.'s minicomputer is up and running and expected to save the company $20,000/year in salaries, according to Thomas Stott, president.

Unprecedented growth in the two-year period prior to the system's installation last December prompted the firm to look for an alternative to its manual way of doing business, Stott recalled.

The company, which supplies and services marine equipment for ships, was faced with a customer list that increased from 800 to 1,200 clients in that period. To avoid adding two more employees, the company considered minicomputers, time-sharing, service bureaus and even large-scale systems, he noted.

As the firm's growth rapidly advanced, so did the bulk of forms that had to be filled out for the Internal Revenue Service (IRS) and for the firm's Swedish parent company, Asea.

Quarterly reports that were "out of sync" with those required by IRS had to be developed for the Asea group and required a lot of the company's time, he noted.

Primary Requirement

A primary requirement for any mini installed was that whatever system the company chose, a separate DP department would not have to be set up.

"It became very clear that an interactive mini would be the way for us to go. We wanted it to assist the people that were doing the work," Stott said.

When the decision to go with a minicomputer was finally made, the firm "evaluated at least three [systems]. The principal reason we chose Mini-Computer Systems, Inc. is because it is right next door," he noted.

With the mini supplier in close proximity, the firm had quick access to programmers and maintenance. "There is a tremendous amount of interaction between their programmers and ourpeople,' Stott added.

Program development on the system "took a lot longer than anyone expected,' Stott noted, adding he'd advise anyone going into a small business system without packaged programs not to be overly optimistic about meeting programming completion schedules.

Stott also said he recommends the department heads work very closely with the programming personnel. Everyone thought "the computer can't do my work, it's too specialized"; that's the reason to get the higher management people involved with the system," he said.

"This is no time to assign a clerk to work with the programmers," he warned.

First-time users shouldn't depend on the minicomputer company to guide them either, he noted. "Guide the company; pin them down," he advised. Also, be aware that if different applications will be up at different times, the business will inevitably be out of phase and some 'catching up work' will have to be done. "Unless you don't put any applications on until that particular day, you'll have to cope with this," he said.

The system at Stal-Leval includes a

(Continued on Page 41)

Datum Has Controller for PDP-11

ANAHEIM, Calif. – Datum, Inc. has introduced an RK11D-compatible disk controller for Digital Equipment Corp. PDP-11 minicomputers.

The microprocessor-controlled unit interfaces up to eight drives with a total of 20M-byte capacity to the system, Datum said.

The 8-bit bipolar micro is said to provide fast I/O without allowing "bus hogging," it added.

Through firmware, the micro handles seek, read and write functions, read and write checks, control and drive reset, write lock and hardware poll.

Software interface between the controller and the Unibus is provided by programmable hardware registers.

Called the Model 4091 (E), the unit accommodates two daisy chains, each with four single-density and 2.5M-byte drives. It can also service four dual-density 5M-byte disks in a double daisy-chain configuration, the firm noted.

The control prices begin at $2,900, Datum said from 1363 S. State College Blvd., Anaheim, Calif. 92806.

System's Jobs Range From Accounting to Biorhythms

By Esther Surden

Of the CW Staff

CLEARWATER, Fla. – A small business system at Rockley Research Academy here is giving this management information firm the data it needs to help its clients increase sales and profits, according to Dr. Graham C. Rockley, president of the company.

"We offer a comprehensive service" to professionals such as lawyers and doctors that encompasses everything from doing their accounting, writing payroll checks, maintaining client lists, taking care of mailings and printing labels, preparing statistics on their practices and doing biorhythm charts, Rockley said.

"We are primarily concerned with motivating our clients to increase sales and profits," Rockley noted, adding the IBM System 32 helps because it provides the kind of management information the practitioner, who is not a businessman, needs.

But "we find in business, people get demoralized by figures; the biorhythms provide an area of fascination to get them away from logic. We try to motivate people to get away from the usual."

The system at Rockley Research "gets a fair workout," he reported. It is a 16K System 32 with 5M bytes of disk, a 155 line/min printer and a 3741 key-to-diskette unit.

About 100 private practices are accommodated on the system. In addition, the firm deals with 2,500 other businesses that do not receive the comprehensive service.

Rockley became involved with computers through his son, who knew Fortran. He became acquainted with the IBM system after considering an IBM 3 and buying some time on an 1130 at a service bureau.

The System 32 seemed to be just what was needed for his business, he said. "Of course, I had to reorient myself to RPG-II," he added.

All the software for the system was written by Rockley himself.

"We have over 300 large programs in our library," he added, "which is quite a few for the small system, and we plan to upgrade our disk to the largest available, 13.7M bytes."

Firm Saves $20,000 After 'Tough Teething'

(Continued from Page 40)

65K-byte Micos CPU, 10M-byte disk drive, two CRTs, a 330 char./sec printer and applications software. The hardware cost $55,000 and the software $20,000, according to Stott.

Customized software was necessary because many of the company's applications were unique because of their subsidiary status," Stott explained. "[The vendor] had to tailor everything to our needs," he said.

System Applications

The system is being used for purchase order processing, order tracking, invoicing, inventory control and general accounting, Stott said.

A U.S. company could order a part for one of its ships which is located anywhere in the world and the system keeps track of where each part is to be shipped, he explained.

The CRTs are located in the service and accounting departments. When the firm receives an order, the firm's vendor numbers and customer numbers are entered into the system.

Inventory is checked to see if the item is in stock. If not, the information in the system is used to produce a purchase order, Stott explained.

After the acknowledgement that a purchase order has been placed comes back from the vendor, that data is entered into the system and used to produce the final invoice, he added.

At shipping time, the destination and shipping charges are added. The data then becomes the territory of the accounting department as an accounts receivable.

"We get involved in five different currencies and once a week we have to change exchange rates. The system computes the price of U.S. dollars and prints out the invoice," Stott explained.

The quarterly reports produced for the parent company not only are due at different times than the IRS reports, but also must be reformatted to be compatible with the company's mainframe.

Hospital Mixes FM With Minicomputers

(Continued from Page 40)

Outpatient receivables and collections will be brought in-house by February or March. Serving 50,000 outpatients a year through 45 clinics, the hospital currently dumps all of the charges from these areas into the 370/145 on tape, he indicated.

Cost, Control Benefits

Not only will conversion from the large mainframe bring cost benefits through hardware savings, but the hospital will also gain in-house control of its billing system which will be connected with the ALP data base, Jones explained.

The Miis operating system was a major criterion for the hardware the hospital selected, he added. No large mainframe operated under that software. The hospital focused its attention on DEC and DG minis, in particular examining machines from DEC PDP 15s and DG Novas all the way to DEC 11/70s and DG Eclipses, Johnson continued.

In the end, the Eclipses came out faster and cheaper. Johnson described the hospital's evaluation of the machines as "very competitive," and noted the facility would have been happy with two DEC 1170s as an alternative to the C300s, if it weren't for the very attractive price difference favoring the Eclipse systems.

The hospital tested the interpretation speed of the Miis code rather than disk accessing time, Johnson said. The Eclipse C300 was "marginally faster than the comparable DEC machine and it hadn't even been updated to run the Eclipse instruction set; it was operating under Nova code," he stated.

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Policy Directive Urges Services

OMB Wants Federal Agencies to Give Up DP Centers

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – Congressional concern about the apparent reduction in competitive government DP procurement in recent years [CW, Aug. 2] has been heightened by a policy directive that calls for abandoning government DP centers in favor of contracts with commercial DP service firms.

The directive, circulated for comment by the Office of Management and Budget (OMB) is a supplement to OMB Circular A-76, issued in 1966.

Circular A-76 suggests ways for government agencies to increase their reliance on commercial establishments to meet DP requirements whenever possible.

Rep. Jack Brooks (D-Texas), chairman of the House Government Operations Committee, fears the supplement to A-76 favors the services sector of the DP industry over those sectors engaged in marketing hardware, software and maintenance services.

In a letter to OMB Director James T. Lynn, Brooks pointed out the supplement instructs agencies "not to make cost studies unless the agency has reason to assume in-house costs will be significantly less than competitive commercial prices."

The effect of this provision is to force government agencies to favor the commercial services sector even if that will cost more than acquiring equipment, he indicated.

The adoption of the A-76 supplement could also "undermine the efficiency of government agencies," he said. "If the supplement is faithfully adhered to, agencies will not even have the opportunity to weigh the loss of nonfinancial needs against alleged cost savings."

Concern About IBM Share

Members of the House Government Operations Committee have learned that although the government's inventory of DP equipment as of last year averaged 30% IBM, commercial facilities averaged 70% IBM, according to a committee spokesman.

Rather than increasing competition among mainframers whose systems are being used for government data processing, use of commercial services could actually reduce competition, he said.

Circular A-76 received little notice from most agencies because the OMB never attempted to enforce it, according to consultant Terry Miller, president of Government Sales, Inc.

The supplement, however, not only suggests how and when to contract for services but goes so far as to indicate how to phase out an entire DP operation and hire an outside contractor "without loss of vital services," Miller noted.

Further, it requires agencies to change their accounting procedures when estimating the cost of in-house DP operations by charging 28% of staff salary overhead – a figure Miller said more accurately represents the government's fringe benefits and retirement plan – instead of the previous 7%.

Previously completed government cost studies are believed by many not to have been economically valid, according to Miller.

Directive Requirements

In keeping with the overall objective, the directive requires agencies to review all government DP facilities by September 1977 to determine whether they are justified under the "exception criteria" of A-76.

If they are not, presumably they will be required to be phased out. The only justifications the OMB accepts for maintaining an internal DP facility, according to regulation A-76, occur when:

- Procurement of a commercial service would disrupt or delay an agency's program.
- It is necessary for purposes of combat support, for retraining of military personnel or for maintaining or strengthening mobilization readiness.
- A satisfactory commercial source is not available and cannot be developed in time.
- The product or service is available from another federal agency.
- The product or service from a commercial source costs more.

The policy directive, signed by Lynn, noted that under the service approach an agency's role would shift from "performing" the DP function to "managing" the DP function. However, rather than eliminating the need for in-house DP expertise, expertise would be required "at a level necessary to prepare service and performance specifications" and then "monitor performance of commercial services."

Development and software people could be eliminated through "attrition," the OMB said.

If the measure becomes public policy, agencies with plans to "initiate, expand, upgrade, replace or modernize" DP functions would be required to review their needs and, if current DP activities could not be justified under A-76, they "shall be terminated in a planned and appropriate manner."

Multiyear Plans Due

Agencies would also be required to prepare multiyear plans for the OMB by next spring indicating which functions will be performed in house and when the agency will rely on private sector services.

By Nov. 10 – less than a month away – agencies must develop a program outline with specific in-house DP areas targeted for replacement by services, according to the directive.

As for acquisition guidelines, agencies are expected to begin immediately to express all DP requirements in terms of

(Continued on Page 44)

Had Right Track, Wrong Horse

IBM Planners Foresaw Plug-Compatible CPUs

By Molly Upton
Of the CW Staff

NEW YORK – As early as 1970, IBM's Market Evaluation Department was concerned about the technical proficiency of the Japanese and foresaw plug-compatible CPUs, according to its "Study of the Semiconductor. Manufacturer in the 1970s" recently introduced into evidence in the U.S. vs. IBM antitrust case.

Gazing into its 1970 crystal ball, the department had the right track but the wrong horse. It foresaw the development of a plug-compatible CPU either by the Japanese or by an American semiconductor manufacturer.

It also foresaw large-scale integrated circuits playing an increasing part in total systems cost and the trend by mainframers to develop their own LSI manufacturing proficiencies.

And it predicted that Texas Instruments, Inc. (TI), which it used as its example for the study, was likely to enter the general-purpose commercial systems business.

TI had the capability of offering "plug-compatible processors" which "operate under IBM's 360 system control programs and are designed to IBM's interface at the I/O channel level," the report said.

IBM Trial Documents

The IBM report said TI was "the semiconductor manufacturer with the best chance to achieve a significant position in the DP marketplace."

TI, according to the script, would probably announce its entry into the general-purpose market in the 1974 timeframe.

While the IBM report did not specify whether the CPU expected from TI would be 360- or 370-compatible, it is likely IBM was thinking of a 370-type machine.

Sources confirmed 80% to 90% of the design could be completed based on 360 principles of operation, and 370 operating principles were available either at the time the report was written or shortly thereafter.

In the report, IBM said that although there would be challenges presented by a weakness in TI's marketing area and the rapid buildup in its DP operations, TI could conceivably manage shipments in the $300 million to $400 million range by the end of the decade.

"In summary, the biggest of the semiconductor manufacturers could become a company to be recognized in the marketplace in the 1970s, but not one of the major manufacturers of DP systems, at least not through internal growth."

"The Japanese, late in entering the DP industry but major users of vanguard semiconductor technology, are undoubtedly keeping close tabs on the pros and

(Continued on Page 44)

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NEW YORK – A merger between Computer Associates International Ltd. and its former distributor, the Software Products Division of Standard Data Corp. (SDC), provides each firm with a marketing vehicle for its products in both the U.S. and Europe.

The firm resulting from the merger, Computer Associates, Inc., will be responsible for all product activities in the western hemisphere, according to Charles B. Wang, president. Wang was formerly vice-president of SDC.

Computer Associates International has offices throughout the continent and is known in the U.S. as source of the CA-Sort package. It will market SDC's products, which include Symbug and Idos/VS, in Europe.

Expected total revenue worldwide as a result of the merger should exceed $5 million, according to Sam Goodner, president of Computer Associates International.

IBM Planners' Script in 1970 Foresaw Plug-Compatible CPUs

(Continued from Page 43)

cons," the IBM report stated.

"Their interest would be twofold," the report observed, "displacing IBM equipment in Japan and establishing themselves in the worldwide marketplace.

"Instead of competing as a systems manufacturer, they could compete as a plug-compatible CPU manufacturer, with their principle thrust in the U.S. probably coming through a third party with an established marketing organization marketing their systems.

"Once again, this would marry their technology skill with someone else's marketing skill. That someone might be an RCA, which has already demonstrated willingness to develop a complete 'intercept' strategy based on System 360 simulation and might be receptive to go one step further to offer a truly 'plug-compatible' processor line.

"Or it could be a Telex or a leasing company – organizations which traditionally have supplanted the original seller by offering users the same product capability at lower cost," the report said.

IBM predicted compatible processors because it recognized there was enough 360 technical information "now in the public domain to clearly indicate the architectural characteristics of the processors to which IBM's system control programming is keyed."

The report also observed that microcode programming gave designers great flexibility in "offering the user something IBM has not offered; e.g., the freedom to run the processor under any microcode he desires – and to change from program to program under machine control."

Why would a semiconductor house enter the CPU area? To improve its margins and to compensate for lost revenues as mainframers developed their own LSI capabilities, the IBM planners said.

Because LSI design requires a very close working relationship between the component and systems designers, the mainframers would develop their own LSI capabilities, IBM predicted.

Semiconductor makers could compensate for this revenue loss and improve their margins by using their systems design capability to manufacture DP equipment for the end user, IBM said.

OMB Wants Agencies To Use DP Services

(Continued from Page 43)

services to be performed rather than equipment to be procured.

States should allow the service vendor "flexibility in equipment and people as long as satisfactory services are provided," the OMB directive said.

All delegations for procurement authority requested from the General Services Administration for obtaining DP equipment should indicate why A-76 does not apply.

Feasibility studies to determine whether a commercial DP activity can be cost-justified should be limited to situations where there is reason to assume in-house cost will be less than competitive commercial prices, the OMB suggested.

Commercial sources would be favored especially when equipment and requirements would become obsolete after a very short time, the OMB said.

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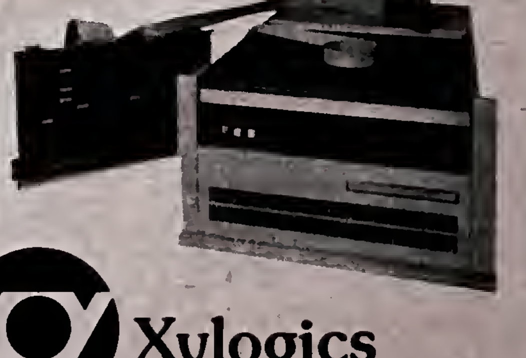

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UCC Looks to Bright Future After Demise of Datran

By Toni Wiseman
Of the CW Staff

DALLAS – University Computing Co. (UCC), rid of its financially impoverished sister firm, the Data Transmission Co. (Datran), has ambitious plans for the future, including the expansion of its role in the software package market.

Several weeks ago, when UCC's parent firm, Wyly Corp., announced its intention to dispose of Datran, UCC concurrently announced it had taken out a $4.1 million loan in order to underwrite Datran financing while Wyly was seeking a potential buyer or investor, according to Mike Harvey, president of UCC's U.S. Group.

The mere fact that the bank lent UCC the money points to the group's financial stability, Harvey said, "since banks don't make loans unless they expect to be repaid.

"And our only means of repaying a loan, as the bank knows, is almost totally out of operating profits since our hardware is on long-term lease and we don't represent a large amount of tangible assets," he said.

"To be candid, [Datran's closing] is a benefit to us because a great many people in the marketplace have looked at UCC as the primary source of the financing of the start-up of the debt and what this does is cut that off as a future financial drain," Harvey stated.

Three Divisions

UCC's U.S. operations are separated into three divisions: Commercial; Scientific and Engineering; and Banking.

"Our concept of our business is that there are two things that set us apart from our competitors," Harvey said. "One is proprietary software and the other is the quality of our service.

"In my concept, the combination of those two really form a nucleus and the various distinctions between the divisions really become simply different ways of delivering service and software to our customers," he said.

One way to deliver is to sell software as a package, another is to offer it over a communications line as a service and a third is to take over the complete management of a customer's data center on a facilities management basis and run UCC software on its computer, Harvey stated.

"In other words, what we really try to do in our product planning is define all the ways a product can be delivered to a customer as one of the decision criteria on that product," Harvey noted.

UCC's Commercial Division develops, packages, supports and sells software for IBM systems as well as a commercial version of a financial control package.

The division has 700 to 800 medium to large IBM equipment users who have purchased packages and some Burroughs users, he said.

Of the eight systems software and one financial packages, a number rated very high on the Datapro honor roll, Harvey noted, adding one has been on the roll for the last two years and one for three years.

The bulk of the Scientific and Engineering Division's business is centered in remote batch computer processing.

From a data center here comprised of five Univac 1108s and a Control Data Corp. 6600, the division operates over a nationwide network servicing a variety of high-speed remote terminals in customer and UCC offices.

UCC-developed applications such as data base management and numerical control are available to the division's 1,000 customers along with proprietary software UCC has acquired under royalty agreements with other vendors.

The division also sells raw computer time, Harvey added.

This year the Scientific and Engineering Division has also been developing packaged software versions of the programs it runs as services in order to provide them as packaged licensed products, he said.

The Banking Division is really a combination of the first two divisions, Harvey said.

As well as servicing the banking industry with two data centers – one in Michigan and a smaller one here – the division offers software on a facilities management basis to small and medium-size banks.

Another part of the division is involved with the sale of proprietary UCC banking software packages covering such applications as commercial loans, installment loans, magnetic ink character recognition and customer information files, he said.

While UCC's European Group operates separately from the U.S. Group, the two have a fairly close relationship, Harvey said.

The international group is broken into two major operating entities, one based in Great Britain and the other in Switzerland.

The UK operation closely approximates the U.S.' scientific and engineering services, he said, while the Swiss operation consists primarily of computer services and its business is more commercially oriented.

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When It Comes to Make-or-Buy Decisions

Total In-House Manufacturing No Longer Makes Sense

By David I. Caplan

Special to Computerworld

Vertical integration, once touted as the ultimate objective of young companies in the computer industry, is not necessarily the best way to go these days.

In light of the fast pace of technology, the increasing need for specialization and the limited availability of resources, I believe today's aspiring young computer peripheral companies should be taking a fresh look at the question of how much in-house manufacturing is appropriate.

We have been doing that at Inforex this year and anticipate this will allow our future products and services to be even stronger and more flexible.

There was a time when it did make sense to do everything in-house. For example, six years ago when Inforex needed a particular set of technical performance capabilities and product costs for its disk and tape drives, the best solution to satisfy both cost and availability factors was to design and build them in-house.

Today it is unlikely we would even consider developing an electromechanical peripheral. Much of the terminal-based system we are planning for the distributed processing market will be purchased from an outside vendor.

Times Have Changed

Times have changed, and in questioning vertical integration today we find the answer is sometimes not the same.

First, there are now many OEM suppliers for the various peripherals we build into our data entry systems. They are usually very good at what they do because they have focused on their particular specialty. Their volumes and skills allow them to offer peripheral products.

Secondly, by watching closely the technological progress and direction of these vendors, we can stay more flexible with our own product lines while letting the OEMs take the risks attendant with leading-edge technology.

We therefore can avoid reinventing the same wheels that half a dozen outside vendors are busy perfecting, leaving our resources available to focus directly on developing total data entry systems.

Thirdly, in carefully analyzing total life cycle product costs, we have seen a much broader set of criteria emerging.

Traditionally, a make-or-buy decision – and therefore the whole question of vertical integration – hinged on a relatively simple analysis of manufacturing costs.

That's just not so today. Of far greater importance is the vast array of costs that will be incurred over the many years the product will be on the market.

These include our incoming inspection, inventory spare parts and field service costs.

Remarketing costs are also a factor in later years, not to mention the ongoing accounting support that a lease base requires. So the original manufacturing cost could be as little as 20% of the total cost picture.

Also, this approach should provide flexibility in both cost and/or product improvements, especially needed during a system's mid-life, when competitors' newer offerings often are more price-competitive.

End Result Important

It is extremely important to keep a sharp focus on one's primary area of business.

Customers are less concerned about how we bring together the various building blocks in a system as long as the system gets the job done in a reliable, timely manner.

What added value will there now be for Inforex? There are several answers to that. First, let me stress we are not categorically moving away from vertical integration.

We are simply adopting a much more critical approach to cost analysis, and our make-or-buy decisions will be guided by a broader array of economic and technical considerations. There is substantial value added in this approach.

More important, we will contribute our expertise in marketing, field service and customer support.

While we will continue building a certain portion of our subassemblies in-house, it is in the area of software development that we will have the greatest value added.

We feel it is particularly important to maintain a strong logic design capability.

Advances in semiconductor technology can be of benefit if we buy chips and design them onto boards ourselves.

Caplan is vice-president of engineering at Inforex, Inc.

DECSYSTEM-20.
It took a minicomputer company to offer hardware this economical.

Not just anybody could have come out with a DECSYSTEM-20.

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Digital Equipment Corporation.

To create a DECSYSTEM-20, we took the same approach to computing that's made us the number one company in minicomputers.

That approach says that a computer must first of all be affordable – giving you the most popular computer for the least amount of money.

With the DECSYSTEM-20, this approach meant giving you big system capability at a total system cost of under $10,000 a month.

Our approach to minicomputers also said that a computer must be approachable. Meaning easy to install. Easy to use. And small in size.

With the DECSYSTEM-20, this approach meant giving you a full-scale general purpose system that installs like a dedicated mini. A sophisticated machine that needs no operating staff and can be run interactively by just about anyone. All in a package that takes up about a fraction of the space required by other machines of similar performance.

But, to create a DECSYSTEM-20, we also took the same approach to computing that's made us the leader in large-scale interactive systems for the last eleven years.

That approach says a computer should offer you the kind of powerful software that will give you not simply everything you expect in a big system, but everything you need.

With the DECSYSTEM-20 this

CA Flexing Market Muscles After Record Sales Year

By Toni Wiseman
Of the CW Staff

IRVINE, Calif. – Looking back on a $30 million year, Computer Automation, Inc. (CA) is optimistic about the future, particularly since it feels strong in all areas necessary for success – financing, hardware and marketing.

The mini maker shipped over 5,000 minicomputers in 1976; has averaged 70% growth over the last five years while the industry had an overall compound growth of 33%; and reduced its debt to zero.

CA has three operating groups: the Naked Mini Division (NMD), which serves OEMs' needs; the Commercial Systems Division (CSD), which markets the Syfa distributed processing system to end users and OEMs; and the Industrial Products Division (IPD), which designs and builds automatic test systems for circuit boards.

CSD is probably the most exciting part of the company at this point, according to David H. Methvin, CA's president.

Dealing in dispersed data processing, it has adopted the corporate stance of marketing only to big blue chip companies, he said, noting this amounts to a potential $1.5 billion market this year.

"Our growth in this area is limited not by the market but by us," Methvin said, "so we can grow at will until we get a large portion of the market because there is room for a lot of people.

"It's an area in which we're picking up a piece of the growth rather than having to carve out a piece of someone's hide."

IPD, on the other hand, expects to "push over some guys in the marketplace," he said.

Finances and Growth

CA is proud of its financial record and its growth from $21 million in sales last year to this year's record $30 million.

"We've grown on our retained earnings and we're currently the only minicomputer company which pays a dividend," he added, noting the dividend is significant not because of the amount, but because it means CA is not "in for a quick buck but is planning for the long range."

CA's corporate philosophy is to undersell its products, Methvin said: "That way the user is happily surprised when he discovers the extra capabilities.

"We also believe in high profit margins to enable us to grow and support our customers," he said.

To date, CA has grown without acquiring any new companies, but that avenue of growth is still open, Methvin admitted.

David H. Methvin

"Being in a market as large as ours is and growing as fast as it is, we've had our hands full with our own growth up until the last couple of years, so we didn't need to go outside.

"You need excess management to acquire a company and we didn't have a surplus. We also didn't want to acquire a company which had a lesser growth potential than we did because we didn't want to dilute ourselves.

"Now we believe we have sufficient strength in management and financial resources to take on the risk of an acquisition, and we have the distribution that makes acquiring peripherals more attractive and meaningful," he said.

Methvin added, however, that he doesn't foresee adding any new divisions this year.

CA markets only to the "volume sophisticated user" in all three of its product areas, Methvin stated.

The users must be sophisticated both in terms of computers and the business they are in, he emphasized, since CA will not customize its products, provide any application software or supply turnkey systems.

"We simply will not sell a Syfa to a first-time user or the guy who wants only one. We don't want to be in the hand-holding business.

Instead, we market to large insurance companies who are sophisticated and buy in volume," he said, adding he had once gone so far as buying back a computer a salesman had sold singly.

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International News

On 'Selective' Basis

ICCL to Supply Singer Users in Canada

By Esther Surden
Of the CW Staff

MONTREAL – International Computers of Canada Ltd. (ICCL) will be supplying Singer hardware in Canada, including parts for Singer System Ten, 1500 and point-of-sale (POS) units as well as some new systems, ICCL President T.W. Randall said in an interview here.

"We will sell all of those product lines on a selective basis," he said. "Selective" implies the firm is not going to sell equipment in geographical areas where it cannot be maintained, he indicated.

"As far as Singer users are concerned, the main issue is that their investment here in Canada has been salvaged and maintained; they now have someone to supply them parts," he said.

The firm doesn't intend to get into the same bind as Singer, Randall said, and plans to sell hardware to new users without providing the support first-time users really require.

First-time users will have to seek software help elsewhere, Randall said. TRW is maintaining Singer equipment in Canada.

There are more than 100 System Ten users in Canada, representing a possible $1 million in add-on and future sales and POS and intelligent terminals could bring the firm an additional $1 million each, he estimated.

"All along we have kept a low profile; we will not rock anyone's boat. While we always had the marketing right, we didn't know what the rules were," Randall said.

The rules have since been clarified, he noted, and thus the company will enter the Singer marketplace.

Singer users in Canada are extremely nervous, he said, because they received a letter notifying them that consulting from Singer would cost $45/hour and on-site help would be $100/hour.

ICCL's entry into the Singer marketplace will help alleviate some of that nervousness, Randall indicated, because some consulting will be available from ICCL, although the firm will not provide turnkey services.

ICCL has been in business in Canada for almost two years and has shipped an average of one system per month. Its primary product is the 2903 system, which has been described by some as a supermini; the 2904 will be introduced in Canada shortly.

ICL Designs CRT For Iraqi Users

LONDON – International Computers Ltd. (ICL) has developed an Arabic version of the 7502 modular intelligent terminal system in a project underwritten by the government of Iraq.

The ability to display Arabic characters is becoming an indispensable requirement for the rapidly expanding Middle East market; the development is a comprehensive one, including two traditional character sets and the standard set recommended by the Iraq National Computer Center, according to *Computer Weekly*.

The Iraqi character set is a simplified and formalized version of the traditional script with fewer variations for each character.

The major problem faced by ICL was that – although the Arabic alphabet has only 29 characters – the conformation of most characters varies according to their position in a word and depends on the letters preceding and following it.

ICL has developed a set designed for a 12 by 7 dot matrix screen, a higher level of definition than the standard 7502 screen.

The system also allows connected script to be displayed, making it easier to read.

Algerian Boom Expected

ALGIERS, Algeria – A plan by this nation to double the value of its installed computer base to $120 million over the next five years should be viewed as a boon by mainframe manufacturers, according to *Computer Weekly International* (CWI).

Many of the installed computers are second- or old third-generation machines, CWI noted.

The total value of the installed base is estimated at $50 million; "as well as doubling this figure over the next five years, Algeria expects to take the value of installed machines up to $250 million by 1985," the article said.

The predicted rapid growth of the installed base was attributed to the equally rapid economic growth of the country.

Proposed applications include industrial and economic development, agriculture, telecommunications and service areas as well as the development of a national information system.

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Tran Basing Business Philosophy on 'Actionary' User

By John P. Hebert
Of the CW Staff

EL SEGUNDO, Calif. – Data communications, as opposed to data processing, "is just now coming into its own," J. Robert McConlogue, vice-president of marketing at Computer Transmission Corp. (Tran), said in a recent interview here.

Users are beginning to take a look at network arrangements and the dollars spent on those arrangements; they are taking an overview and beginning to plan, McConlogue said in observing the advent of an "actionary" rather than a reactionary user stance.

In keeping with that description of data communications, he noted users are the main factors in change at Tran.

"We try to develop a 'we're in this with you' relationship to understand the users' future requirements. It is our present mode of doing business," he said.

To avoid designing obsolescent systems, "we provide more than just black boxes. We like to look at ourselves as a network house," McConlogue said.

Accordingly, the bulk of activity and energy within the company has focused on Tran's Pacuit M3200 network switching and management system, McConlogue said.

Pacuit will also be a major part of the company's activities in the future, McConlogue noted. People are going after intelligence in networks to take the processing load off the CPU for a maximum utilization of communications facilities, he said.

Pacuit was billed as the present evolution in a product line which began at the company's inception in 1969.

In the past, the Model 2100 Multitran time-division multiplexer was the main product. It was superseded by Tran's line of local distribution equipment, which in turn was superseded by the M300 asynchronous circuit switcher capable of switching multiplexers to each other.

Now Tran is providing the capability of a transparent network for both packet and circuit switching through different protocols to compatible devices, he said.

"Users are more interested in multiprotocol capabilities in networks. That whole issue is mired in gray because of political and business reasons.

"The entire communications environment is searching for future protocols and standards," McConlogue said.

"We would certainly support Europe's CCITT settling on X-25 as a worldwide standard, although a lot of that depends on what Bell does," he added.

The Pacuit format will come down to the smaller users eventually and this is where the common carriers will become involved, he predicted.

Users can be partitioned, although their facilities would appear to them as their own private system. Small users will therefore have the potential of becoming part of the larger community of users, according to McConlogue.

Tran's sales orientation, in the past and for the future, he admitted, will be toward large manufacturing firms – large companies with spread-out facilities – because they are the users with large requirements and large networks.

The future in data communications and the way in which the minicomputer- and microprocessor-based networking capabilities come down to the medium-sized and smaller users depends on what steps the common carriers take in providing a data service much like voice service – in other words, a service with worldwide access, he said.

There has been no significant change in the company's pricing structure over the past year, he said, adding that could happen when technological advances bring faster and cheaper microprocessor units.

For the present, Tran has identified its product niche in response to a particular need.

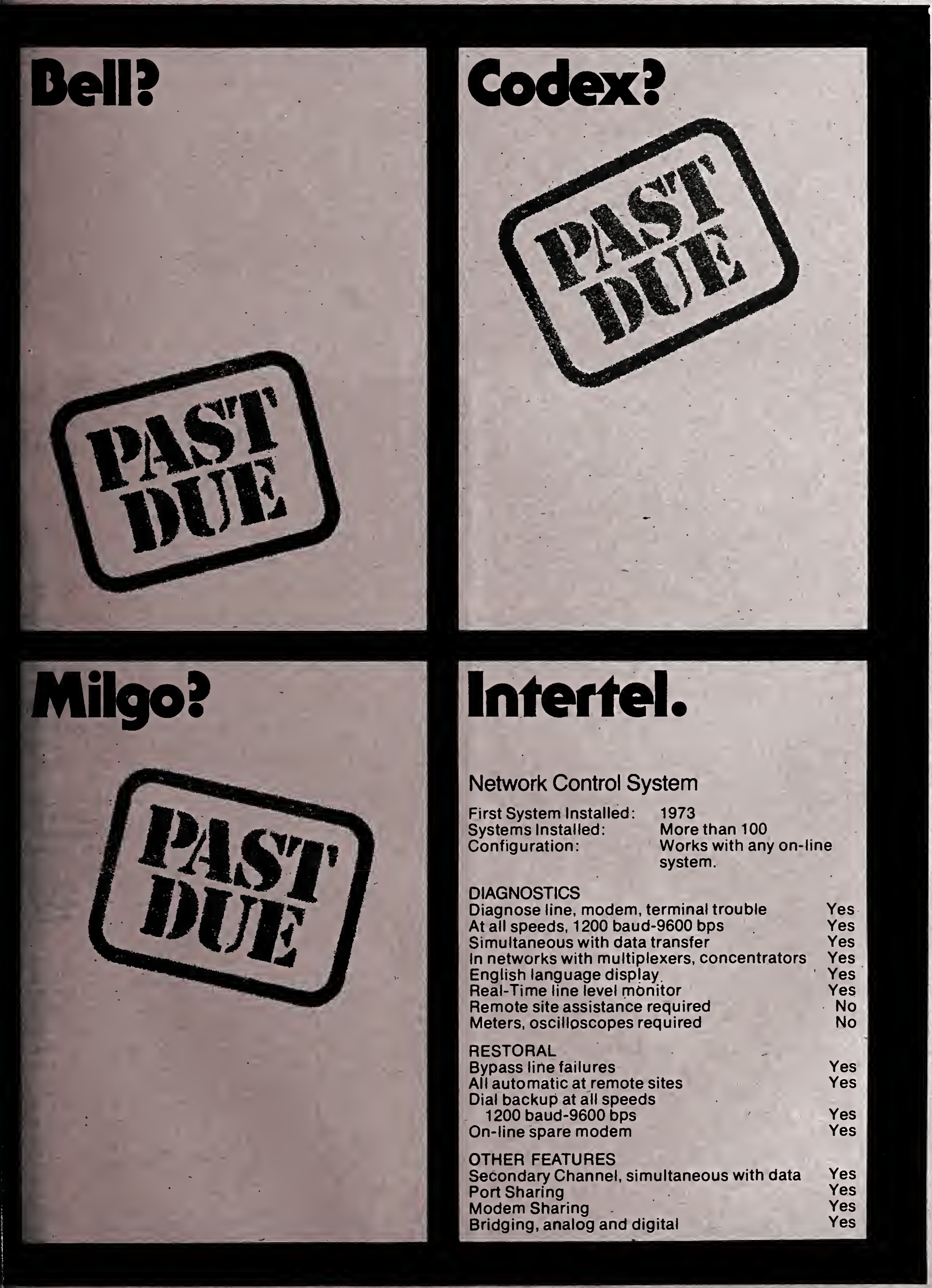
Contracts

System Development Corp. has been awarded a $2.5 million support contract by the U.S. Navy Electronics Laboratory Center for systems analysis and computer program development support in such areas as command and control, intelligence DP, communications systems and management information systems.

Chilton Corp. has signed a $750,000 contract with the Credit Bureau of Oklahoma City, Inc. for automated consumer credit-reporting services.

Kennedy Co. has received a two-year $550,000 contract from Texas Instruments (TI) for the use of Kennedy's Model 9700 tape transports in TI's data communications interfaces.

Computer Network Corp. has awarded a contract from the U.S. Navy Bureau of Personnel for the development and operation of an advanced manpower information system eventually covering all personnel operations for the Navy.



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Simultaneous with data transfer	Yes
In networks with multiplexers, concentrators	Yes
English language display	Yes
Real-Time line level monitor	Yes
Remote site assistance required	No
Meters, oscilloscopes required	No
RESTORAL	
Bypass line failures	Yes
All automatic at remote sites	Yes
Dial backup at all speeds 1200 baud-9600 bps	Yes
On-line spare modem	Yes
OTHER FEATURES	
Secondary Channel, simultaneous with data	Yes
Port Sharing	Yes
Modem Sharing	Yes
Bridging, analog and digital	Yes

London Seminar Set

LONDON – A seminar devoted to marketing to the U.S. telecommunications industry will be held here at the Royal Kensington Hotel Nov. 17-18.

The seminar, sponsored by the market research firm of Frost & Sullivan, will include sessions on selling equipment and services to the U.S. Fortune 500, to the newer common carriers, to the residential and small business marketplace and to the Bell System.

Other sessions will deal with the U.S. regulatory arena, telecommunications technologies and the effective use of distributors.

The U.S. telecommunications industry offers several advantages for foreign suppliers, according to Harry Newton, a seminar speaker.

Registration for the seminar is $350. Further information is available from Bob Sanzo, Frost & Sullivan, 106 Fulton St., New York, N.Y. 10038.

Levied by California

Services Firm Battling Keypunching Tax

By Molly Upton
Of the CW Staff

SUNNYVALE, Calif. – Intellidata, Inc., a consulting, programming and keypunch services firm, is fighting a $29,000 sales tax levied retroactively for revenues from its keypunch services.

Under California statute, keypunching and key-to-disk services are taxed as "fabrication services," just as sheet metal is, according to R.J. Carpenter, president of Intellidata, who became aware of the statute six years after founding the firm.

Carpenter feels the DP industry needs organizations within each state to act as lobbies. He is concerned there may be others who may be as naive as he was about such state tax legislation.

Intellidata spent several weeks sorting out its income received over the past six years into various categories, such as straight keypunching, straight programming, programming and keypunching and miscellaneous, he said.

Carpenter's interpretation of the law is that programming is not taxable if presented to the client in the form of coding sheets; once it is keypunched, however, the keypunching services are taxable, he explained.

But the local representatives of the State Board of Equalization, in a hearing on Intellidata's case, indicated the firm should pay sales taxes on all work performed for any client for which it also provided keypunching services.

This includes such services as consulting, which in no way involves keypunching, Carpenter said.

Carpenter attributed the distinction to the similarity between preparing a program on coding sheets and the work of accountants and lawyers, which have some weight in government regulations.

"In areas of taxation, I think California tends to be a leader," he remarked.

The next step for Intellidata is to meet with a legal staff member of the State Board of Equalization and then, if necessary, the board itself, he said. The board is comprised of five elected officials and the state controller.

If Intellidata loses that round, it is prepared to pay the tax and sue the state to recover the payment, Carpenter said.

"I think they're setting up a test case," he added.

Orders & Installations

Merrill Lynch, Pierce, Fenner & Smith, Inc. has ordered 57 printer terminals from Genesis One Computer Corp. The terminals will be used in an inventory system for control of the firm's on-hand securities and other negotiable items.

The Founders Society of the Detroit Institute of Arts has installed a Burroughs B1714 system for museum membership and campaign development applications.

Avard/Garth, a California institutional food distributor, has installed a Univac 90/30 system for order entry.

The U.S. General Services Administration has ordered magnetic cartridges and cards from the 3M Co.

United Airlines has ordered Incoterm Corp. intelligent terminals under a multiyear master purchase agreement valued at about $1.5 million. Equipment on order includes Model 304 terminals equipped with Type 5 badge readers and 80-column card readers, SPD Series 20 clustered intelligent terminal systems and SPD PRP-45/200 printing reader/punches.

Montana State University at Bozeman has ordered a 32/55 system for concurrent heat exchanger data acquisition and real-time simulation from Systems Engineering Laboratories, Inc.

The California State University and Colleges system has installed a Control Data Corp. Cyber 173 for its statewide timesharing student education network.

Ford Motor Co. has ordered a PIX II network including two local I/O sets and seven remote I/O sets and peripherals from Paradyne Corp. The order is valued at $1.3 million.

Rocky Mountain Bank Note Co. of Denver, Colo., is installing six key-display systems from Mohawk Data Sciences Corp.

The *New York Post* has ordered a Model 2550 copy-processing system from Harris Corp.'s Composition Systems Division, the first phase of the paper's shift from hot metal to cold type production.

Ambassador International has installed a Honeywell 66/40 system to handle catalog sales and contract mailing services.

Aeroject Nuclear Co. has installed a Control Data Corp. system including a Cyber 76 and a Cyber 173 to handle the scientific workload at the Idaho National Engineering Laboratory.

Gulf Coast Machine and Supply of Beaumont, Texas, has ordered an NCR Criterion 8550 system for on-line order entry and inquiry, raw materials control, production control and general accounting.

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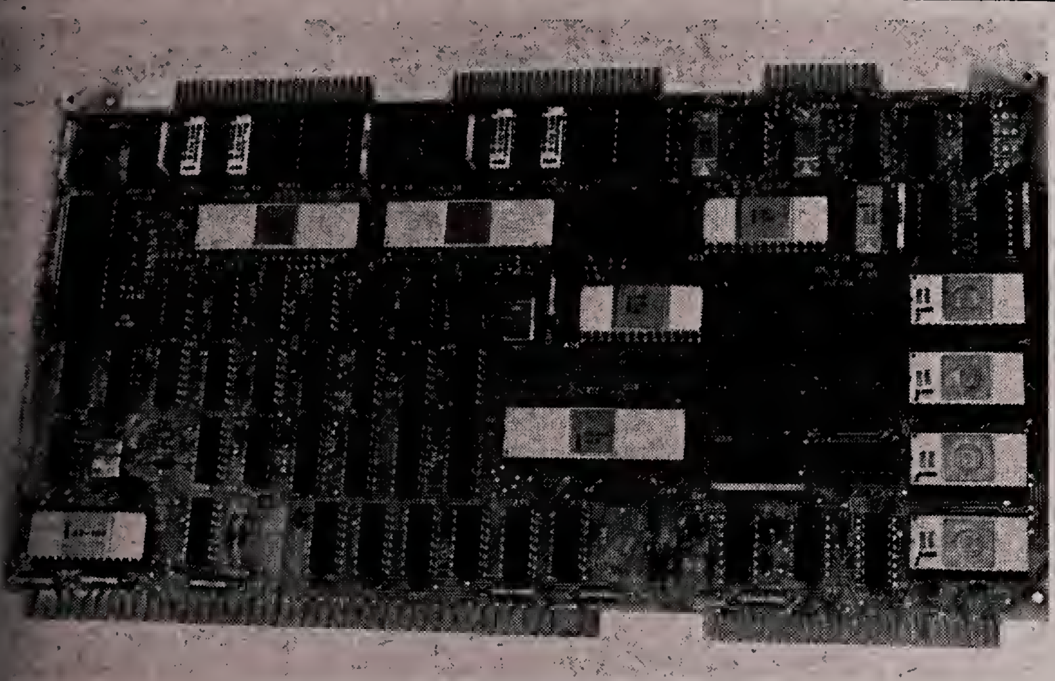

Intel Corp. 80/20 Single-Board Computer

Microcosm

Single-Board 80/20 From Intel Has Multiprocessor Capability

SANTA CLARA, Calif. – Intel Corp.'s SBC 80/20 single-board computer contains full multiprocessor capability, programmable interval times and programmable interrupt control on a 6.75- by 12-in. board, according to the vendor.

The unit can operate as a stand-alone, 8-bit general-purpose computer, as part of a distributed processing network or in a multiprocessor system containing up to 16 SBC 80/20s or other master subsystems, Intel said.

In contrast with its predecessor, the 80/10, the 80/20 enhancements include a reduction in CPU real-time loading made possible through LSI peripherals that increase throughput and real-time responses, the firm said.

These peripherals allow system operating configurations to be customized with software.

The system includes an 8080A 8-bit parallel NMOS CPU; 2K bytes of read/write memory in static random access memories (RAM); sockets for up to 4K bytes of erasable, reprogrammable or masked read-only memory; and 48 programmable parallel I/O lines with sockets.

It also includes a programmable serial data I/O interface and software-selectable bit/sec rate generation along with RS-232C capability; a master bus control logic for four masters, extendable to 16; an eight-level programmable interrupt control; and bus expansion drivers.

Since each 80/20 contains its own local memory and I/O, several may simultaneously execute programs without incurring speed reductions from heavy bus loading, the firm said. Interprocessor communication occurs via global memory and the system bus.

Various memories and diskette peripherals as well as card-cage modules are available.

System programming, the only development task associated with using the SBC 80/20, can be done directly using the Intellec microcomputer development system, Intel's ICE-80 in-circuit emulator and resident software, the firm said.

Single-unit cost of the 80/20 is $895; the price for quantities of 100 is $520. OEM discounts apply to quantities over 10 units, the firm said from 3065 Bowers Ave., Santa Clara, Calif. 95051.

Intel Adds Resident Compiler, Modular Programming to 8080

SANTA CLARA, Calif. – Intel Corp. has unveiled a PL/M compiler resident on the Intellec microcomputer development system and Isis-II, a diskette operating system included with the diskette system hardware.

Together they comprise a software system comparable to library systems sometimes used to prepare applications programs for larger computers, Intel said.

Support software can automatically link program modules to form an applications program, the company added.

The system supports programming of Intel 8080 microcomputers, the SBC 80 single-board computer systems and other products based on the 8080A CPU, the firm said.

The system allows designers to use different source languages for different modules with assurance that object code will merge properly and easily, Intel said.

Supports Modular Software

The latest PL/M compiler fully supports modular software design by generating linkable and relocatable object code modules, Intel said.

These modules can be automatically joined to each other or to object code modules by a relocating macro assembler contained in the Isis-II package, Intel said.

Previous PL/M compilers lacked this capability, a spokesman said, adding the previous 8080A PL/M compiler was a cross-compiler requiring a larger CPU or a time-sharing system; the latest one runs on the 8080A itself.

Software designers can use either PL/M or the 8080 system Assembly language for the individual modules.

In addition, the programmer can define data structures and also access absolute addresses, Intel said.

The Isis-II includes all the other subsystems required for modular programming such as an updated macro assembler, linker, locator and library manager, according to Intel.

The macro assembler generates linkable and relocatable code, provides expanded macro capability and can produce a cross-reference listing, the firm said.

It also contains a text editor with string search, substitution, insertion and deletion commands and provides access to the system monitor.

The compiler is priced at $975 and deliveries begin in November, Intel said from 3065 Bowers Ave., Santa Clara, Calif. 95051.

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ISI Organizers Find Starting Software House Trying

By John Stephenson

Special to Computerworld

DURHAM, N.H. – Starting a software house and building it into a successful, if small, venture can be a trying experience.

Seven years after its founders took their first trial steps in the industry, business is looking up for Instructional Services, Inc. (ISI), an educational consulting group here.

The company has adapted minicomputers to handle educational management software and has a growing share of this market, according to Tim Cook, vice-president of marketing. "We're looking at projected sales of $220,000 this year," he noted.

Formed by Teachers

ISI's six founders all taught in the math department at the same high school. They noticed school administrators had trouble handling information – grade reporting, student schedules, program budgets and so on.

"We used to say, 'There has to be a better way,' " Cook recalled. "We knew we could do it better."

So, the six formed ISI in the fall of 1969. Dan Heisey, president and majority owner of the company, financed the venture on assets of less than $100,000.

Heisey renewed old contacts, and ISI went to work helping schools which had received government grants to develop innovative programs.

The company introduced teachers to new programs, supervised the programs and handled the complicated reporting required by the government.

ISI also worked on solutions to the information-handling problems the teachers had seen in schools. "At first we did a lot of this by hand," Cook said, "but gradually it became clear we had to go to computers."

Heisey, who had moonlighted as a programmer for several years, decided to try to program school management systems on a minicomputer. "I thought if we can get these machines to do that kind of work, the low overhead would really give us a financial edge," Heisey explained. ISI leased a Digital Equipment Corp. PDP-12, and Heisey went to work.

'Too Many Pressures'

One by one, four of the original founders sold their shares and dropped out. "There were too many pressures," Cook explained.

"We all put in tremendous hours. When something had to be done, and we couldn't pay someone else to do it, one of us had to come in. I remember once I worked 56 hours straight. Then I came in two days later and worked two 36-hour shifts," he said.

"For a while, we had tremendous problems with cash flow," he added. "Schools use a fiscal year that starts in July, so we'd get lots of money in the first part of August, then have to stretch it over the whole year."

In 1972, Steve Blain joined ISI and began straightening out the company's finances. "Before that, nobody was really doing it," Cook said. "One year, we made $12,000. The next year, without knowing it, we spent that, plus another $8,000. We were in the hole, and we didn't even know it."

Scheduling System

Heisey knew that scheduling was one of the toughest information-handling problems for schools. Someone must juggle student course requests, available courses and time and room openings to organize a master schedule, so Heisey developed the Omega scheduling system and wrote a program allowing it to be run on ISI's mini.

ISI also used the mini to analyze student learning patterns and organize program budgeting and other management information systems for schools.

Heisey gave a number of reasons for ISI's growth over the next few years. The company learned how to "persuade" a mini to do the work of far more expensive machines. The low overhead simplified financial problems and gave ISI a big edge over larger competitors.

Seven years after the company was formed, ISI's outlook is bright. The company serves 80 school districts and has bought a DEC PDP-8 to help handle the workload.

ISI now offers a wide range of DP services for schools, including attendance, grade reporting, scheduling, budget accounting and payroll.

The company does management consulting for schools with special problems and helps develop instructional programs.

Executive Corner

- Robert W. Roth has been appointed vice-president and sales manager for Western Union Data Services Co.
- Alexander W. Giles Jr. has been named vice-president of finance and administration for Modular Computer Systems, Inc.
- Murray Friedberg has been appointed senior vice-president of operations for Applied Systematics, Inc.
- Seymour A. Rosen has been named vice-president and general manager of General Instrument Corp.'s Business Systems Division.
- David S. Leff has been appointed director of procurement and Joseph M. Mulroy has been named director of contracts for Burroughs Corp.'s Federal and Special Systems Group.
- Thomas A. D'Auria has been appointed vice-president, marketing and administration, of Sysdoc, Inc. He was previously manager of user services for the Columbia University computer center.
- Edward J. Gunnigle has been appointed to the board of directors of Applied Digital Data Systems, Inc.
- James W. McNabb has been named vice-president of operations at General Datacomm Industries, Inc.
- Dr. P.J. Plauger has been appointed vice-president of technical services and Christopher Gane has been named vice-president of marketing at Yourdon, Inc.
- George A. Reed has resigned as a director and vice-president of finance at Data 100 Corp. He will continue to be employed by the company as a financial consultant.
- Paul B. Wesling has been appointed vice-president of product integrity at Data Disc, Inc.

Configure a winner.

A special report on *Data Communications Network Configurations* in the November 29th *Computerworld.*

Configuring a new data communications network could be one of the most demanding challenges you face in a decade. It means your DP staff -- including managers and technical specialists -- must make crucial choices on many costly items like terminals, modems, line speeds and protocols. In addition, numerous intangibles are changing the data communications environment, and your contingency preparations should encompass these. Building greater flexibility into your system to accept new sites, faster lines, more advanced equipment, etc. is one example. In sum, a data comm network means a long term capital investment for your organization. And this requires long range planning for a system that will meet your teleprocessing needs today -- and in the future.

Computerworld's November 29th issue will include a special report, edited by Ron Frank, on *Data Communications Network Configurations.* The supplement can show you some of the right ways to plan your network -- and how to avoid common pitfalls. In addition to case studies and commentary from well-informed users who understand the data communications environment with all its implications, you'll find applications stories and tutorials on the equipment, carrier services, line protocols, teleprocessing software, etc. that's available to make up your system.

So whether you're building a network or managing one, you'll find important and useful information in the November 29th *Computerworld.* And if you're marketing data communications products or services, you should advertise to your audience here. The ad closing date is November 12th. Talk to your *Computerworld* salesman for complete details. Or call Judy Milford at (617) 965-5800.

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Earnings Reports

AMERICAN MICROSYSTEMS
Three Months Ended July 3

	1976	1975
Shr Ernd	.....	$.10
Revenue	$17,341,000	16,157,000
Earnings	(5,298,000)	223,000
6 Mo Shr	.....	.19
Revenue	32,035,000	31,359,000
Earnings	(9,149,000)	415,000

APPLIED MAGNETICS
Three Months Ended June 30

	1976	1975
Shr Ernd	$.10	$.06
Revenue	16,054,000	14,992,000
Earnings	421,000	240,000
9 Mo Shr	.20	.12
Revenue	45,629,000	46,935,000
Earnings	842,000	502,000

BEEHIVE MEDICAL ELECTRONICS
Three Months Ended June 30

	1976	1975
Shr Ernd	$.20	$.11
Revenue	3,237,627	2,522,256
Earnings	187,836	104,922
9 Mo Shr	.57	.34
Revenue	8,730,514	6,804,386
Earnings	538,043	318,026

BOOTHE COMPUTER
Three Months Ended June 30

	1976	1975
Shr Ernd	$.28	$1.01
Revenue	14,543,000	10,114,000
Disc Op	.....	(56,000)
Spec Cred	.....	a3,775,000
Earnings	1,053,000	3,942,000
6 Mo Shr	.46	1.03
Revenue	26,612,000	19,703,000
Disc Op	.....	55,000
Spec Cred	.....	a3,775,000
Earnings	1,750,000	4,001,000

a-From extinguishment of debt.

BUNKER RAMO
Three Months Ended June 30

	1976	a1975
Shr Ernd	$.29	$.03
Revenue	81,271,000	76,444,000
Tax Cred	835,000	.....
Earnings	2,287,000	848,000
6 Mo Shr	.31	b.....
Revenue	164,564,000	148,189,000
Tax Cred	1,350,000	.....
Earnings	3,094,000	465,000

a-Restated for foreign currency translation. b-Preferred dividend requirements exceeded net income.

BURROUGHS
Three Months Ended June 30

	1976	a1975
	(000)	(000)
Shr Ernd	$1.05	$.99
Revenue	464,300	416,890
Earnings	42,470	39,137
6 Mo Shr	1.66	1.58
Revenue	869,573	782,103
Earnings	66,740	62,508

a-Restated.

CINCINNATI MILACRON
Three Months Ended June 30

	1976	a1975
	(000)	(000)
Shr Ernd	$.52	$.90
Revenue	107,280	107,625
Earnings	1,940	3,317
6 Mo Shr	.93	1.69
Revenue	213,453	216,904
Earnings	3,480	6,228

a-Restated.

CODEX
Three Months Ended June 30

	1976	1975
Shr Ernd	$.59	$.76
Revenue	7,303,000	6,711,000
Earnings	941,000	1,172,000
9 Mo Shr	1.38	2.22
Revenue	18,917,000	19,040,000
Earnings	2,174,000	3,355,000

COMMUNICATIONS SATELLITE
Three Months Ended June 30

	1976	1975
Shr Ernd	$1.08	$1.16
Revenue	39,456,000	34,590,000
Earnings	10,849,000	11,628,000
6 Mo Shr	2.19	2.43
Revenue	76,732,000	71,065,000
Earnings	21,890,000	24,320,000

COMPUTER SCIENCES
Three Months Ended July 2

	1976	1975
Shr Ernd	$.23	$.11
Revenue	55,541,000	50,367,000
Tax Cred	750,000	.....
Earnings	3,288,000	1,542,000

DECISION DATA COMPUTER
Three Months Ended Feb. 28

	1976	1975
Shr Ernd	.....	$.11
Revenue	$7,728,000	11,690,000
Tax Cred	.....	162,000
Earnings	(621,000)	425,000

HAZELTINE
Three Months Ended June 30

	1976	1975
Shr Ernd	$2.05	.....
Revenue	23,848,000	$21,082,000
Tax Cred	770,000	.....
Earnings	4,125,000	(325,000)
6 Mo Shr	2.45	.....
Revenue	44,772,000	37,875,000
Tax Cred	1,050,000	.....
Earnings	4,905,000	(1,365,000)

CONRAC
Three Months Ended June 30

	1976	a1975
bShr Ernd	$.89	$.59
Revenue	34,509,000	21,954,000
Earnings	1,462,000	889,000
b6 Mo Shr	1.64	1.10
Revenue	62,135,000	42,963,000
Earnings	2,607,000	1,642,000

a-Restated. b-Reflects 10% stock dividend in July 1976.

DATA DOCUMENTS
Three Months Ended June 30

	1976	1975
Shr Ernd	$1.01	$1.27
Revenue	17,121,276	16,424,815
Earnings	473,948	598,298
9 Mo Shr	4.32	4.72
Revenue	53,596,032	47,984,325
Tax Cred	.....	5,000
Earnings	2,027,650	2,219,454

DATAPRODUCTS
Three Months Ended June 26

	1976	1975
Shr Ernd	$.48	$.25
Revenue	26,700,000	18,693,000
Earnings	a3,575,000	b1,731,000

a-Includes $1,118,000 from sale of building. b-Includes $739,000 from sale of Data Card Corp. shares.

DATUM
Three Months Ended June 30

	1976	1975
Shr Ernd	.....	$.01
Revenue	$3,202,000	3,121,000
Earnings	a(479,000)	21,000
6 Mo Shr	.....	.....
Revenue	6,742,000	6,288,000
Loss	a432,000	37,000

a-Includes $1,044,000 inventory write-down and contract overrun reserve.

DOCUTEL
Three Months Ended June 30

	1976	1975
Shr Ernd	$.26	$.06
Revenue	8,422,000	6,453,000
Tax Cred	343,000	65,000
Earnings	686,000	145,000
6 Mo Shr	.50	.08
Revenue	16,670,000	12,265,000
Tax Cred	644,000	94,000
Earnings	1,300,000	208,000

ELECTRONIC ASSOCIATES
Three Months Ended July 2

	1976	a1975
Shr Ernd	$.22	$.10
aRevenue	6,247,000	7,511,000
Disc Op	544,000	.....
Tax Cred	254,000	92,000
Earnings	582,000	258,000
6 Mo Shr	.....	.25
bRevenue	11,751,000	15,250,000
Disc Op	544,000	.....
Tax Cred	264,000	301,000
Earnings	(352,000)	661,000

a-Restated. b-From continuing operations.

ELECTRONIC MEMORIES & MAGNETICS
Three Months Ended June 30

	1976	1975
Shr Ernd	$.20	.....
Revenue	22,372,000	$25,236,000
Earnings	1,321,000	134,000
6 Mo Shr	.92	.....
Revenue	43,214,000	48,898,000
Earnings	a5,481,000	(260,000)

a-Includes gain on sale of $3,789,000 investment.

FOUR-PHASE SYSTEMS
Three Months Ended June 30

	1976	1975
Shr Ernd	$.61	$.28
Revenue	15,037,359	12,366,633
Tax Cred	717,000	187,000
Earnings	1,728,705	526,319
6 Mo Shr	1.28	.48
Revenue	29,727,234	23,664,795
Tax Cred	1,336,000	298,000
Earnings	3,244,563	797,941

INFORMATION MAGNETICS
Three Months Ended July 3

	1976	1975
Shr Ernd	$.32	$.45
Revenue	8,340,000	5,946,000
Tax Cred	18,000	266,000
Earnings	473,000	569,000
6 Mo Shr	.68	.85
Revenue	16,510,000	11,570,000
Tax Cred	48,000	509,000
Earnings	938,000	1,075,000

ITEK
Three Months Ended July 2

	1976	1975
	(000)	(000)
Shr Ernd	$.24	$.05
Revenue	50,708	50,873
Earnings	744	155
6 Mo Shr	.36	.....
Revenue	104,063	95,980
Earnings	1,126	(469)

INFOREX
Three Months Ended July 2

	1976	a1975
Shr Ernd	$.17	$.07
Revenue	15,476,000	14,582,000
Tax Cred	228,000	.....
Earnings	499,000	192,000
6 Mo Shr	.29	.09
Revenue	30,383,000	27,728,000
Tax Cred	369,000	58,000
Earnings	852,000	271,000

a-Restated.

Wema Urges Updating of Tariff Law

PALO ALTO, Calif. – An "outmoded, poorly written" customs law is causing U.S. businessmen to be treated like criminals, according to the Western Electronics Manufacturers Association (Wema).

The Tariff Law of 1930, which Wema said was written for "an era of prohibition and rum-running," is hopelessly out-of-date when applied to electronics companies such as semiconductor firms which regularly ship U.S.-made components overseas to be assembled into products for reshipment to the U.S., a Wema spokesman said recently.

In testimony before the Subcommittee on Trade of the House Ways and Means Committee, Robert Noyce, chairman of the board of Intel Corp., recommended on Wema's behalf that Congress modernize Section 592 of the 1930 law to rectify the "unfairness" of its applications to a whole range of violations, ranging from inadvertent error to deliberate fraud.

Wema recommended that the Congress amend Section 592 to:

- Permit an importer to voluntarily come forward and make restitution for underpaid duties without exposing himself to the normal penalty actions.
- Eliminate penalty notices demanding forfeiture of imported goods when the forfeiture demanded bears little or no relationship to the alleged offense or to the actual amount of revenue lost by the government.
- Provide a meaningful and unrestricted judicial review for those cases where the importer wants to appeal the Customs penalty, which he cannot do under the present law without risking litigation on the full domestic value of the goods.

Make clear distinction between fraudulent and negligent acts. Provide no penalties for clerical errors, mistakes of fact or law, inadvertence or trivial negligent acts.

Noyce pointed out that the law hits particularly hard at semiconductor and other high-technology manufacturers with final assembly operations overseas.

Complex semiconductor circuits are precision-made in the U.S. and shipped overseas for hand assembly into finished products, he explained. This assembly operation represents only a small fraction of the total value of the finished product, and only that small "value added" is subject to customs duty.

Yet, because of the inflexibilities of Section 592, if a question arises about the importation, a penalty notice is issued against the importer for the total dollar value of the shipment, he said.

This results in announcements of multimillion-dollar claims against an importer when the actual revenue loss to the government is only a fraction of that amount, he noted.

The 1930 statute requires this kind of notice regardless of the actual customer revenue at stake or the degree of culpability involved in the misclassification or erroneous valuation of the goods imported, Noyce stated.

The law's language is so rigid the same penalties are issued in cases involving inadvertent oversight as in cases of willful violations of the law, he added.

Service Reconditions Tape Heads, Cites User Savings in Purchases

MISSION HILLS, Calif. – Magnetic Recovery Technologists, Inc. (MRT), which provides tape-head reconditioning for both end users and manufacturers, has enabled one large customer to reduce purchases of new heads by 40%, according to Bob Sillers, vice-president of sales.

A dual-gap 1,600 bit/in. industry-compatible head costs about $325, but MRT will recondition these heads for $85 in quantities of 50 or more or for $125 in small quantities, he said.

Founders of the firm, who had all worked for head manufacturers, noticed heads being returned for reconditioning received low priority and took three months to a year to service. Thus, the user was left with no choice but to buy a new head, he said.

MRT generally reconditions and returns lots in two weeks, he noted, adding acceptance of the firm's reconditioning service has been "overwhelming."

Most of MRT's customers are manufacturers.

MRT does not yet recondition disk heads, but Sillers said it plans to offer this service in the future.

The two-year-old firm doubled its business in the last year and anticipates growing 50% to 75% next year, he said.

MRT is at 10145 Sepulveda Blvd., Mission Hills, Calif. 91345.

Trans-Data Seeking Used Disk Heads

BELMONT, Calif. – Trans-Data Corp. is actively seeking sources of crashed or used IBM 2314- or 3330-compatible disk heads for its expanding replacement head business.

Trans-Data repairs and refurbishes disk heads and disk-drive spindle assemblies for third-party maintenance companies, OEM manufacturers and end users.

Finished products are guaranteed to meet or exceed OEM specifications; the actual performance data for each unit is included from test stand runs before shipment, the firm said.

The company services heads from IBM, California Computer Products, Memorex, Ampex, Diablo and Tracor, it added.

Trans-Data is at 170 Glenn Way, Belmont, Calif. 94002.

Supershorts

The race is heating up for the first introduction of a 6,250 bit/in. tape drive suitable for minis and midis, according to sources. A logical vendor would be Storage Technology Corp., one of the first to announce a large-scale 6,250 bit/in. drive, the sources noted.

– – –

The Japan branch of ICC Far East, Inc., a subsidiary of International Communications Corp., has been granted expanded operating status by the Japanese Ministry of International Trade and Industry. ICC Far East is now authorized to provide complete sales, leasing, rental and service of data communications equipment.

– – –

Inforex, Inc. has named Oriental Computer Engineering Corp. as its marketing distributor in South Korea.

– – –

Dataproducts Corp. has made its first Model 2230 printer shipments from its Dublin, Ireland, plant. Production capacity is expected to grow to 25 unit/week by the end of 1977.

– – –

Shugart Associates has approved flexible disks manufactured by Information Terminals Corp. for use in Shugart flexible diskette drives.

– – –

Applied Digital Data Systems, Inc. has shipped its 25,000th video display terminal. The Consul 980 was part of a shipment to Honeywell of Phoenix.

Correction

The company referred to as Broadway Associates in "Service Industry to Pass $9 Billion Mark by 1980" [CW, Sept. 13] is Broadview Associates.

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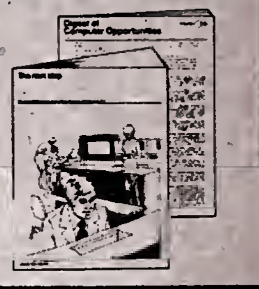

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Holders Win Ampex Suit

SAN FRANCISCO – A federal judge here has awarded a $9 million settlement to purchasers of Ampex Corp. securities from May 1970 through August 1972.

The purchasers of securities had named as defendants Ampex, certain present and former Ampex directors and officers and the firm's former auditor, Touche Ross & Co.

Filed in January 1972, the suit charged purchasers were damaged because the defendants issued false and misleading information in annual interim reports, news releases and filings with the Securities and Exchange Commission.

Overstatements Alleged

The suit alleged the defendants overstated accounts and notes receivable, failed to establish reserves for doubtful accounts, failed to write off certain assets and failed to report proposed discontinuation of certain product lines.

The $9 million settlement fund is made up of $2.3 million from Ampex, $5.5 million from Lloyd's of London as insurer of the directors and $1.3 million from Touche Ross.

Lear Siegler Posts Net With 32% Rise for Year

SANTA MONICA, Calif. – Lear Siegler, Inc. finished the year with its strongest quarter of the year. Revenues for the year were up 8% over the previous year's figures and earnings rose 32%.

Earnings for the fourth quarter were $9.9 million or 59 cents a share compared with $6.9 million or 41 cents in the same quarter last year.

Quarter revenues climbed to $912.3 million from $170.4 million in the year-ago period.

Earnings for the year were $25.4 million or $1.75 a share compared with $19.3 million or $1.24 a share a year ago.

Revenues were $694.3 million compared with $642.5 million a year ago.

Sales of Lear Siegler's terminals were $13.7 million, up 80% from $7.5 million in fiscal 1975.

During the year, the company acquired the remaining 50% interest in American Aviation and the remaining 10% interest in Acts Computing Corp. as well as the Sierra Electronic Operation of Aeronutronic Ford.

Since June 30, 1973, Lear Siegler has disposed of seven divisions or subdivisions which generated nearly $50 million of sales in 1973, according to Robert T. Campion, chairman.

DDI Half-Year Net Dips

GREENWICH, Conn. – Data Dimensions, Inc. (DDI) saw its earnings rise in the second quarter but decline in the six months.

Earnings for the quarter ended June 30 rose to $111,000 or 14 cents a share, including a $75,000 tax credit, compared with $100,000 or 13 cents a share with a $45,000 tax credit in the year-ago period.

Revenues rose to $2.1 million from $1.2 million in the 1975 quarter.

In the six months, earnings dropped to $220,000 or 28 cents a share compared with $229,000 or 29 cents a share, including a $50,000 tax credit, in the year-ago period.

Half-year revenues rose to $3.8 million compared with $2.3 million in the same period last year.

Lester M. Gottlieb, president, said the increase in second-quarter revenues was brought by a high percentage of outright sale of equipment.

The company is in the process of renegotiating its line of credit and modifying marketing and pricing plans to increase the equipment rental base, he added.

Quantor Reports Earnings Up 31% As Revenues Climb 27% in Year

MOUNTAIN VIEW, Calif. – Quantor Corp.'s 1976 earnings rose 31% while revenues gained 27% over the preceding year.

Earnings for the fourth quarter rose to $336,000 or 12 cents a share, including a $164,000 tax credit, compared with $245,000 or 9 cents a share with a $115,000 tax credit in the year-ago period.

Revenues climbed to $4.9 million compared with $3.7 million in the 1975 fourth quarter.

For the year ended July 31, Quantor reported earnings of $940,206 or 34 cents a share, including a tax credit of $440,000. Last year's earnings totaled $715,524 or 26 cents a share, including a $335,000 tax credit.

Revenues for the year rose to $16.8 million compared with $13.2 million in 1975.

"The performance improvement in revenue and earnings was accomplished although performance in first fiscal half had leveled off due to the recession," Charles Askanas, president, said.

"The second half showed the renewed growth and considerable improvement in margins we predicted in September of 1975.

"As for the future, the economy is improving and the computer output microfilm market is continuing to grow at a compounded rate of 30% per year."

Revenues Jump 50% In Telefile Period

IRVINE, Calif. – Telefile Computer Corp.'s nine-month revenues rose 50% over the year-ago figure due in large part to a 152% increase in the third quarter which helped offset the prior six months' loss.

Earnings for the third quarter were $530,831, including a $148,000 tax credit. This compared with a third-quarter loss of $6,592 in 1975.

Quarter earnings offset the prior six months' loss of $198,781 and resulted in accumulated nine-month earnings of $332,050 or 28 cents a share.

Third-quarter revenues were $2.2 million compared with $860,404 in the year-ago period.

Revenues for the nine months were $3.6 million compared with $2.3 million in the 1975 nine months.

Nickels & Dimes

Pertec Corp. has changed its name to **Pertec Computer Corp.** and its state of incorporation from California to Delaware. The firm will also issue 300,000 shares for its Employee Stock Purchase Plan.

$ $ $

Wang Laboratories has increased its quarterly dividend to 3 cents a share for common stock and 5 cents for Class B common, payable Oct. 28 to holders of record Sept. 20.

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Electronic Memories & Magnetics declared a dividend of 25 cents a share payable Sept. 10 to holders of record Aug. 25.

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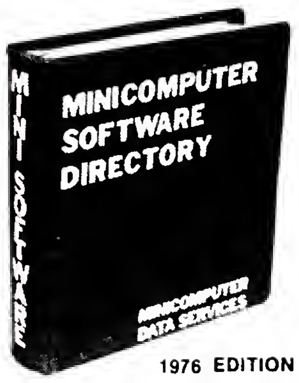

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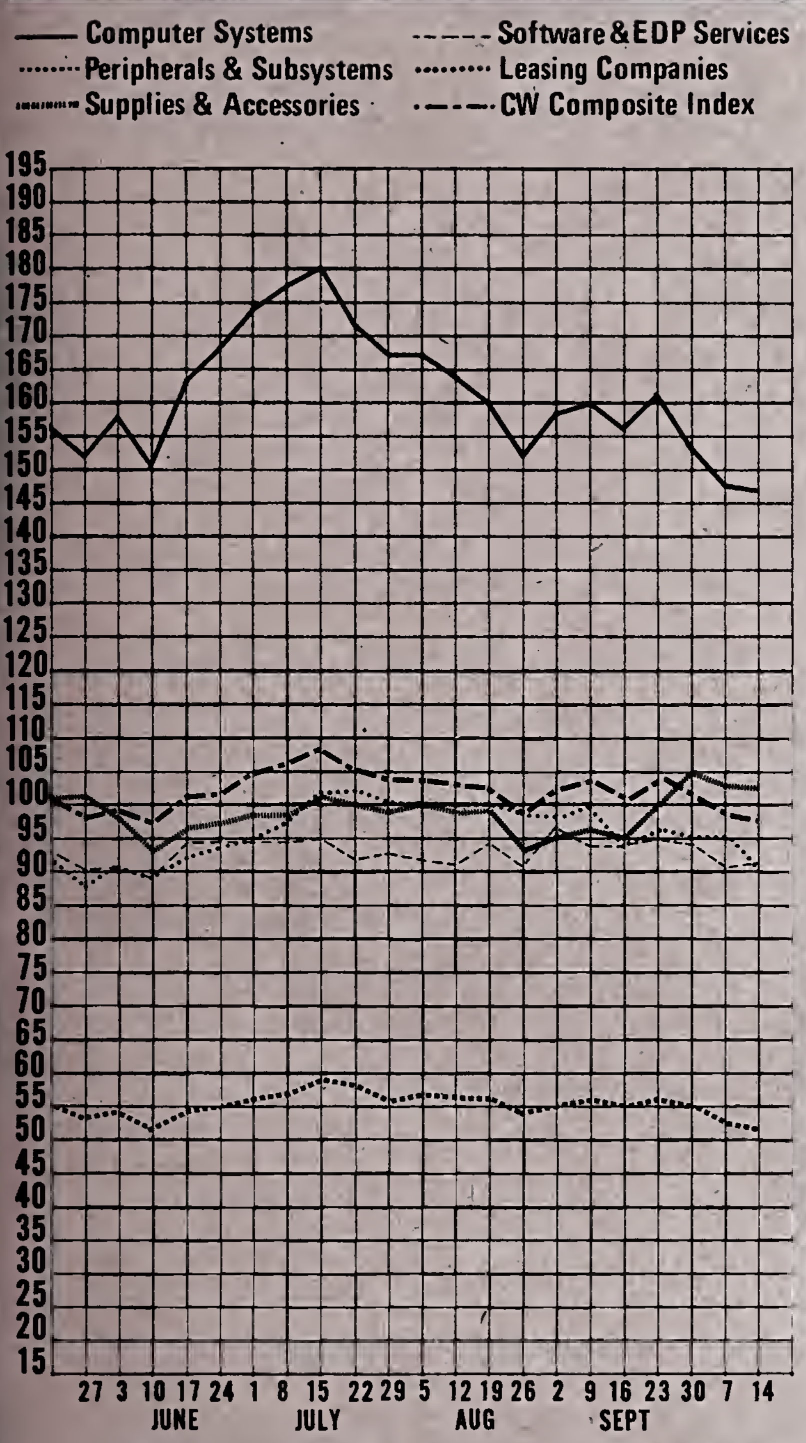

Earnings Reports

BOLT BERANEK & NEWMAN

Year Ended June 30

	1976	1975
Shr Ernd	.....	b$1.03
Revenue	$27,892,100	28,688,200
Earnings	(281,300)	b1,271,100
3 Mo Shr	.11	.14
Revenue	7,201,400	8,049,500
aEarnings	134,000	176,300

a-Includes $1.2 million gain on long-term investment disposition in the year and $704,100 in the 1976 quarter compared with $39,500 in the 1975 year and quarter. Also includes development and start-up costs related to Telenet Communications Corp. of $1.4 million in the year and $393,900 in the 1976 quarter compared with $471,300 and $196,400 in 1975, respectively. b-Includes $308,300 gain from exchange of non-exclusive license.

CARTERFONE COMMUNICATIONS

Three Months Ended June 30

	1976	1975
Shr Ernd	$.07	$.08
Revenue	2,408,300	1,836,300
Spec Cred	.....	a7,900
Earnings	142,100	164,600
9 Mo Shr	.31	.23
Revenue	6,925,300	5,383,900
Spec Cred	.....	a15,700
Earnings	652,100	449,600

a-From fully reserved nontrade note receivable collection.

CENTRONICS DATA COMPUTER

Year Ended June 30

	1976	1975
Shr Ernd	$2.02	$1.52
Revenue	52,182,233	41,535,529
Earnings	9,763,897	7,281,018

HEWLETT-PACKARD

Three Months Ended July 31

	1976	1975
Shr Ernd	$.65	$.73
Revenue	277,477,000	245,880,000
Earnings	18,472,000	20,286,000
9 Mo Shr	2.05	2.27
Revenue	792,880,000	706,256,000
Earnings	57,319,000	62,651,000

MCI COMMUNICATIONS

Year Ended March 31

	1976	1975
Revenue	$28,430,000	$6,845,000
Loss	27,790,000	39,289,000

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, OCTOBER 13, 1976

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COMPUTER SYSTEMS

EXCH		PRICE 1976 RANGE (1)	CLOSE OCT 13 1976	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	84-108	88	- 1/4	-0.2
O	COMPUTER AUTOMATION	10- 19	14 3/4	- 1/4	-1.6
N	CONTROL DATA CORP	18- 27	23 1/4	0	0.0
N	DATA GENERAL CORP	40- 60	44 1/8	-1	-2.2
O	DATAPOINT CORP	24- 46	28 3/4	0	0.0
O	DIGITAL COMP CONTROL	2- 7	6	+ 1/8	+2.1
N	DIGITAL EQUIPMENT	138-181	151 1/2	-1 3/4	-1.1
N	ELECTRONIC ASSOC.	2- 5	2 5/8	- 1/8	-4.5
A	ELECTRONIC ENGINEER.	7- 16	8 5/8	+ 1/4	+2.9
N	FOXBORO	28- 50	45	- 3/4	-1.6
O	GENERAL AUTOMATION	4- 11	4 3/8	0	0.0
O	GRI COMPUTER CORP	1- 1	5/8	0	0.0
N	HEWLETT-PACKARD CO	85-117	86 3/4	-2 3/4	-3.0
N	HONEYWELL INC	34- 56	42 3/8	-1 3/4	-3.9
N	IBM	227-288	272 1/2	-7	-2.5
D	MANAGEMENT ASSIST	1- 3	1 3/4	+ 3/8	+27.2
O	MEMOREX	18- 33	22	0	0.0
O	MICRODATA CORP	10- 28	21 5/8	-1	-4.4
O	MODULAR COMPUTER SYS	4- 14	3 3/4	- 1/2	-11.7
N	NCR	24- 37	34 3/4	+ 3/8	+1.0
O	PRIME COMPUTER INC	4- 14	12 3/4	+ 1/4	+2.0
N	PERKIN-ELMER	19- 27	22 1/8	+ 5/8	+2.9
N	RAYTHEON CO	45- 67	63 3/8	+ 7/8	+1.3
N	SPERRY RAND	40- 52	45 1/4	-2	-4.2
O	SYCOR INC	12- 31	12 1/2	+ 1/2	+4.1
A	SYSTEMS ENG. LABS	6- 10	6 5/8	- 3/4	-10.1
N	VARIAN ASSOCIATES	13- 17	12 3/4	- 3/4	-5.5
A	WANG LABS.	11- 20	13 7/8	- 3/4	-5.1

LEASING COMPANIES

EXCH		PRICE 1976 RANGE (1)	CLOSE OCT 13 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMDISCO INC	3- 10	9 1/2	+ 3/4	+8.5
A	COMMERCE GROUP CORP	2- 3	2	0	0.0
A	COMPUTER INVSTRS GRP	1- 3	1 7/8	+ 1/4	+15.3
M	DATRONIC RENTAL	1- 8	7/8	+ 1/8	+16.6
A	DCL INC	1- 1	5/8	0	0.0
N	DPF INC	5- 8	6 7/8	- 1/4	-3.5
N	ITEL	6- 15	11 3/4	-1 1/4	-9.6
N	LEASCO CORP	6- 19	16	+ 1/8	+0.7
O	LEASPAC CORP	0- 1	1/8	- 1/8	-50.0
O	NRG INC	0- 1	1/4	-	-16.5
A	PIONEER TEX CORP	6- 9	7 1/4	- 1/8	-1.6
N	U.S. LEASING	7- 12	8 3/4	- 1/4	-2.7

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES

EXCH		PRICE 1976 RANGE (1)	CLOSE OCT 13 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 3	1 1/2	+ 1/8	+9.0
O	ANACOMP INC	6- 11	7 1/8	0	0.0
A	APPLIED DATA RES.	2- 4	3 1/8	+ 1/8	+4.1
N	AUTOMATIC DATA PROC	17- 35	27	-2	-6.8
O	COLEMAN AMERICAN COS	2- 6	2 1/8	+ 1/4	+13.3
O	COMPUTER DIMENSIONS	3- 7	5 1/2	- 1/2	-8.3
O	COMP ELECTION SYSTMS	5- 9	5 3/4	+ 1/2	+9.5
D	COMPUTER HORIZONS	1- 2	1 1/2	0	0.0
O	COMPUTER NETWORK	2- 6	5 3/4	+ 3/8	+6.9
N	COMPUTER SCIENCES	4- 8	5 5/8	- 1/2	-8.1
D	COMPUTER TASK GROUP	1- 1	1 5/8	+ 1/8	+8.3
D	COMPUTER USAGE	3- 6	3	0	0.0
O	COMSHARE	2- 9	4 3/4	0	0.0
O	DATA DIMENSIONS INC	2- 4	2 3/4	- 1/8	-4.3
O	DATATAB	1- 1	1 3/8	0	0.0
N	ELECTRONIC DATA SYS.	12- 18	15 5/8	0	0.0
O	INFONATIONAL INC	1- 1	1/8	0	0.0
O	INSYTE CORP	1- 3	1 1/2	0	0.0
O	IPS COMPUTER MARKET.	1- 2	1 1/4	+ 1/8	+11.1
O	KEANE ASSOCIATES	2- 4	2 1/4	+ 1/8	+5.8
O	KEYDATA CORP	2- 5	1 5/8	+ 1/8	+8.3
D	LOGICON	3- 4	3 3/8	0	0.0
A	MANAGEMENT DATA	1- 3	2 1/4	0	0.0
A	NATIONAL CSS INC	13- 25	19 5/8	+ 1/2	+2.6
A	ON LINE SYSTEMS INC	18- 22	18 1/8	- 1/4	-1.3
N	PLANNING RESEARCH	3- 5	3 3/8	- 3/8	-10.0
O	PROGRAMMING & SYS	1- 1	3/8	0	0.0
O	RAPIDATA INC	2- 5	1 5/8	0	0.0
O	REYNOLDS & REYNOLD	13- 21	15 3/4	+ 1/2	+3.2
O	SCIENTIFIC COMPUTERS	1- 1	7/8	0	0.0
O	TYMSHARE INC	15- 28	15 1/4	+ 3/4	+5.1
A	URS SYSTEMS	3- 5	3 5/8	- 1/8	3.3
N	WYLY CORP	2- 7	1 1/2	0	0.0

PERIPHERALS & SUBSYSTEMS

EXCH		PRICE 1976 RANGE (1)	CLOSE OCT 13 1976	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	8- 13	9 7/8	- 3/4	-7.0
D	ADVANCED MEMORY SYS	4- 10	6 1/4	0	0.0
N	AMPEX CORP	5- 10	6	- 3/8	-5.8
D	ANDERSON JACOBSON	2- 4	2 7/8	0	0.0
O	APPLIED DIG DATA SYS	13- 25	18 1/4	- 1/4	-1.3
O	BEEHIVE MEDICAL ELEC	3- 9	8 3/8	- 5/8	-6.9
A	BOLT,BERANEK & NEW	7- 11	7 5/8	- 3/8	-4.6
N	BUNKER-RAMO	5- 10	6 1/2	- 5/8	-8.7
A	CALCOMP	4- 7	3 7/8	- 1/4	-6.0
O	CAMBRIDGE MEMORIES	0- 6	3/8	+ 1/8	+50.0
N	CENTRONICS DATA COMP	20- 36	30 3/4	-2 1/8	-6.4
D	CODEX CORP	22- 42	28 1/2	0	0.0
D	COGNITRONICS	1- 1	3/4	0	0.0
D	COMPUTER COMMUN.	1- 6	5 3/8	- 1/4	-4.4
O	COMPUTER CONSOLES	4- 7	4 1/2	0	0.0
A	COMPUTER EQUIPMENT	1- 3	1 3/4	0	0.0
O	COMPUTER TRANSCEIVER	1- 3	1	0	0.0
D	COMTEN	4- 9	7 1/4	0	0.0
N	CONRAC CORP	20- 25	20 7/8	- 1/8	-0.5
O	DATA ACCESS SYSTEMS	1- 4	4 3/4	0	0.0
D	DATA 100	7- 13	8 1/4	+ 1/8	+1.5
A	DATA PRODUCTS CORP	5- 15	10 7/8	- 1/2	-4.3
O	DATA TECHNOLOGY	1- 2	1 1/4	- 1/8	-9.0
O	DATUM INC	1- 2	1	- 1/8	-11.1
O	DECISION DATA COMPUT	1- 4	1 5/8	+ 1/8	+8.3
O	DELTA DATA SYSTEMS	1- 1	5/8	- 1/8	-16.6
N	ELECTRONIC M & M	1- 4	3 1/4	0	0.0
D	FABRI-TEK	1- 1	3/4	+ 1/8	+20.0
O	GENERAL COMPUTER SYS	1- 2	5/8	- 1/4	-28.5
N	HAZELTINE CORP	4- 12	8 1/4	+ 1/8	+1.5
N	HARRIS CORP	34- 55	49	-2	-3.9
A	INCOTERM CORP	9- 20	12 5/8	- 1/2	-3.8
O	INFOREX INC	3- 7	4 1/8	- 3/8	-8.3
O	INFORMATION INTL INC	10- 18	11 1/2	- 1/8	-1.0
O	INTEL CORP	54-109	57 1/2	+3 1/2	+6.4
A	LUNDY ELECTRONICS	3- 7	3 3/8	- 1/8	-3.5
O	MSI DATA CORP	3- 7	5 7/8	+ 1/2	+9.3
A	MILGO ELECTRONICS	15- 21	15 7/8	- 3/4	-4.5
N	MOHAWK DATA SCI	3- 10	5 5/8	-1 1/8	-16.6
D	PENRIL CORP	1- 3	2	0	0.0
A	PERTEC CORP	3- 8	6 1/8	+ 1/8	+2.0
A	POTTER INSTRUMENT	2- 2	1 3/4	0	0.0
O	PRECISION INST.	3- 10	3	0	0.0
O	QUANTOR CORP	4- 6	4	- 1/8	-3.0
D	RECOGNITION EQUIP	6- 11	8	- 1/2	-5.8
N	SANDERS ASSOCIATES	6- 11	8 3/8	- 1/8	-1.4
O	SCAN DATA	2- 4	1 1/2	-	-3.8
O	STORAGE TECHNOLOGY	9- 13	10	- 1/4	-2.4
O	T BAR INC	5- 10	5 3/4	0	0.0
O	TALLY CORP.	4- 6	4	0	0.0
D	TEC INC	3- 7	6 1/2	+ 1/4	+4.0
N	TEKTRONIX INC	45- 69	62 3/8	-2 1/2	-3.8
N	TELEX	2- 5	2 5/8	- 1/8	-4.5
O	WANGCO INC	11- 22	21 1/8	0	0.0
D	WILTEK INC	2- 2	1 7/8	- 7/8	-31.8

SUPPLIES & ACCESSORIES

EXCH		PRICE 1976 RANGE (1)	CLOSE OCT 13 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED SYSTEMS INC	1- 4	3 3/8	0	0.0
O	BALTIMORE BUS FORMS	3- 5	3 5/8	0	0.0
A	BARRY WRIGHT	6- 10	9	- 1/4	-2.7
O	CYBERMATICS INC	1- 1	1/2	0	0.0
A	DATA DOCUMENTS	25- 45	45 1/4	+ 1/8	+0.2
D	DUPLEX PRODUCTS INC	13- 24	13 3/4	- 1/4	-1.7
N	ENNIS BUS. FORMS	6- 8	5 7/8	- 1/4	-4.0
O	GRAHAM MAGNETICS	8- 13	10 1/2	+ 3/4	+7.6
O	GRAPHIC CONTROLS	13- 19	15 1/2	- 1/2	-3.1
N	3M COMPANY	53- 66	61 1/4	-1 1/4	-2.0
O	MOORE CORP LTD	33- 51	32 3/4	- 1/4	-0.7
N	NASHUA CORP	11- 18	16 3/8	- 1/8	-0.7
O	STANDARD REGISTER	15- 19	16 3/4	+ 1/4	+1.5
O	TAB PRODUCTS CO	5- 11	9 1/2	- 1/4	-2.5
N	UARCO	20- 25	20 1/8	0	0.0
A	WABASH MAGNETICS	4- 9	8 3/8	+ 5/8	+8.0
N	WALLACE BUS FORMS	19- 25	22 1/8	+ 1/8	+0.5

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